LCD-Monitor

Chassis : LS24F9DSM

Model : FX2490HD

SERVICE Manual

TFT-LCD Monitor

FX2490HD

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Refer to the service manual in the GSPN (see the rear cover) for the more information.

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GSPN (Global Service Partner Network)

Area	Web Site
North America	http://service.samsungportal.com
Latin America	http://latin.samsungportal.com
CIS	http://cis.samsungportal.com
Europe	http://europe.samsungportal.com
China	http://china.samsungportal.com
Asia	http://asia.samsungportal.com
Mideast & Africa	http://mea.samsungportal.com

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1. Precautions

1-1. Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1-1. Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2. Servicing the LCD Monitor

1. When servicing the LCD Monitor, Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3. Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistorcapacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):
   WARNING : Do not use an isolation transformer during this test.
   Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

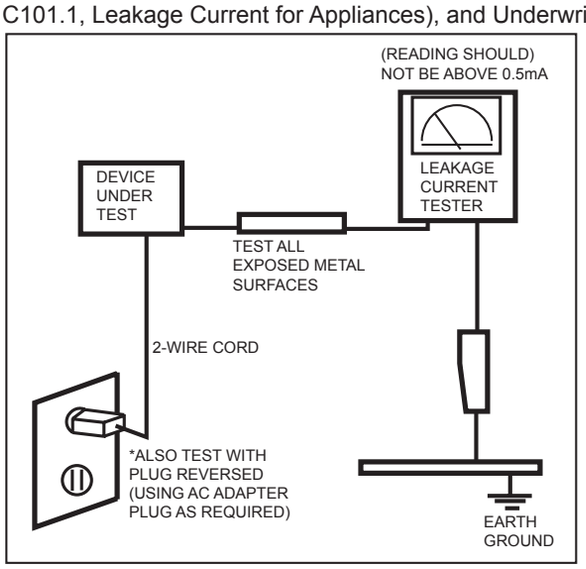


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts.
   The current measured should not exceed 0.5 milliamp.
   Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4. Product Safety Notices

Some electrical and mechanical parts have special safetyrelated characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2. Servicing Precautions

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.
Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.
Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to theblades of the AC plug.
   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3. Static Electricity Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4. Installation Precautions

1. For safety reasons, more than two people are required for carrying the product.
2. Keep the power cord away from any heat emitting devices, as a melted covering may cause fire or electric shock.
3. Do not place the product in areas with poor ventilation such as a bookshelf or closet. The increased internal temperature may cause fire.
4. Bend the external antenna cable when connecting it to the product. This is a measure to protect it from being exposed to moisture. Otherwise, it may cause a fire or electric shock.
5. Make sure to turn the power off and unplug the power cord from the outlet before repositioning the product. Also check the antenna cable or the external connectors if they are fully unplugged. Damage to the cord may cause fire or electric shock.
6. Keep the antenna far away from any high-voltage cables and install it firmly. Contact with the highvoltage cable or the antenna falling over may cause fire or electric shock.
7. When installing the product, leave enough space (10cm) between the product and the wall for ventilation purposes. A rise in temperature within the product may cause fire.

Memo

2. Product specifications

2-1. Feature & Specifications

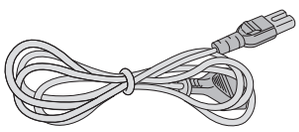
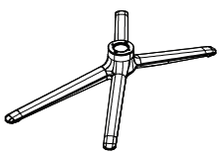
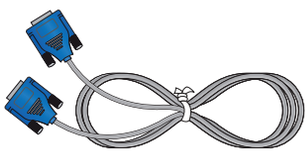
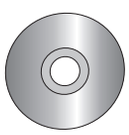
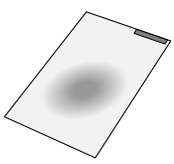
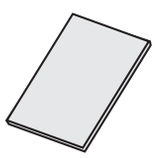
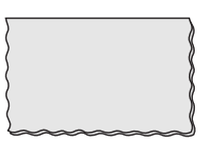
Feature
▶ Supreme Digital Interface & Networking - With a built-in ATV tuner, it supports TV with no particular set-top box and provides simple access with a single remote control. ▶ Excellent Picture Quality ▶ Dynamic Contrast - Automatically detects the input visual signal and adjusts to create optimum contrast. ▶ ATV Tuner, HDMI, Stereo, SRS Trusurround HD support ▶ Convenience -The TV utilizes the HDMI system to implement perfect digital sound and picture quality.

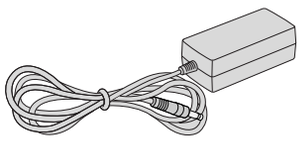
Specifications	
Item	**Description**
LCD Panel	TFT-LCD Panel, RGB Vertical stripe, normally White, 24.0-inch viewable, 0.27675(H) X 0.27675(V) mm Pixel Pitch
Scanning Frequency	Horizontal : 30 kHz ~ 81 kHz (Automatic) Vertical: 56 Hz ~ 75 Hz (Automatic)
Display Colors	16.7 Million colors
Maximum resolution	Horizontal: 1920 pixels Vertical: 1080 pixels
Input Signal	Analog 0.7 Vp-p ±5% positive at 75Ω, internally terminated
Input Sync Signal	Type : Seperate H/V Level : TTL level
Maximum Pixel Clock rate	148.5 MHz
Active Display (Horizontal/Vertical)	476.64(H) X 268.11(V)
AC power voltage & Frequency	AC 110 ~ 240V, 50 ~ 60 Hz
Power Consumption	35W <0.3W
Dimensions Set (W x D x H)	579.0 x 436.0 x 216.0 mm (with Stand) 579.0 x 363.0 x 36.5 mm (without Stand)
Weight Set (After installation Stand)	5.3 Kg (with Stand) 7.5 Kg (Package)
TV System	Tuning: Frequency Synthesize, System: NT4.43 , PAL , SECAM , DVB-T/C Sound: BG,DK,I,L,L’
Environmental Considerations	Operating Temperature: 50˚C ~ 104˚F(10˚C ~ 40˚C) Operating Humidity : 10% ~ 80% Storage Temperature: -4˚C ~ 113˚C(-20˚C ~ 45˚C) Storage Humidity: 5% ~ 95%
Antenna Input	75Ω
Sound Characteristic	- MAX Internal speaker Out : Right: 5W/ Left: 5W - BASS Control Range : -8 dB ~ + 8dB - TREBLE Control Range : -8 dB ~ +8 dB - Headphone Out : 10 mW MAX - Output Frequency : RF : 80 Hz ~ 15 kHz - A/V : 80 Hz ~ 20 kHz

2-2. Spec Comparison to the Old Models

Model	90-MFM FX2490HD	30-MFM B2430HD
Design		
Screen Size	24”	24”
Resolution	1920X1080(FHD) 60Hz	1920X1080(FHD) 60Hz
Brightness	250cd/m²	300cd/m2
Contrast Ratio	1000:1	1000:1
Response Time	5ms	5ms
Viewing Angle	Left/Right/Up/Down : 80˚/80˚/80˚/80˚	Left/Right/Up/Down : 80˚/80˚/80˚/80˚
PC Input	D-SUB, DVI(HDMI)	D-SUB, DVI(HDMI)
Power Consumption	35W<0.3W	39W<0.3W
DPMS	Less than 0.3W	Less than 2W
Sound Output	5W x 2	3W x 2
Dynamic Contrast Ratio	MEGA DCR:1	70000:1
Sound Effect	Dolby Digital Plus Dolby Digital Pulse DTS SRS Theater sound	Dolby Digital Plus Dolby Digital Pulse DTS SRS Theater sound

2-3. Accessories

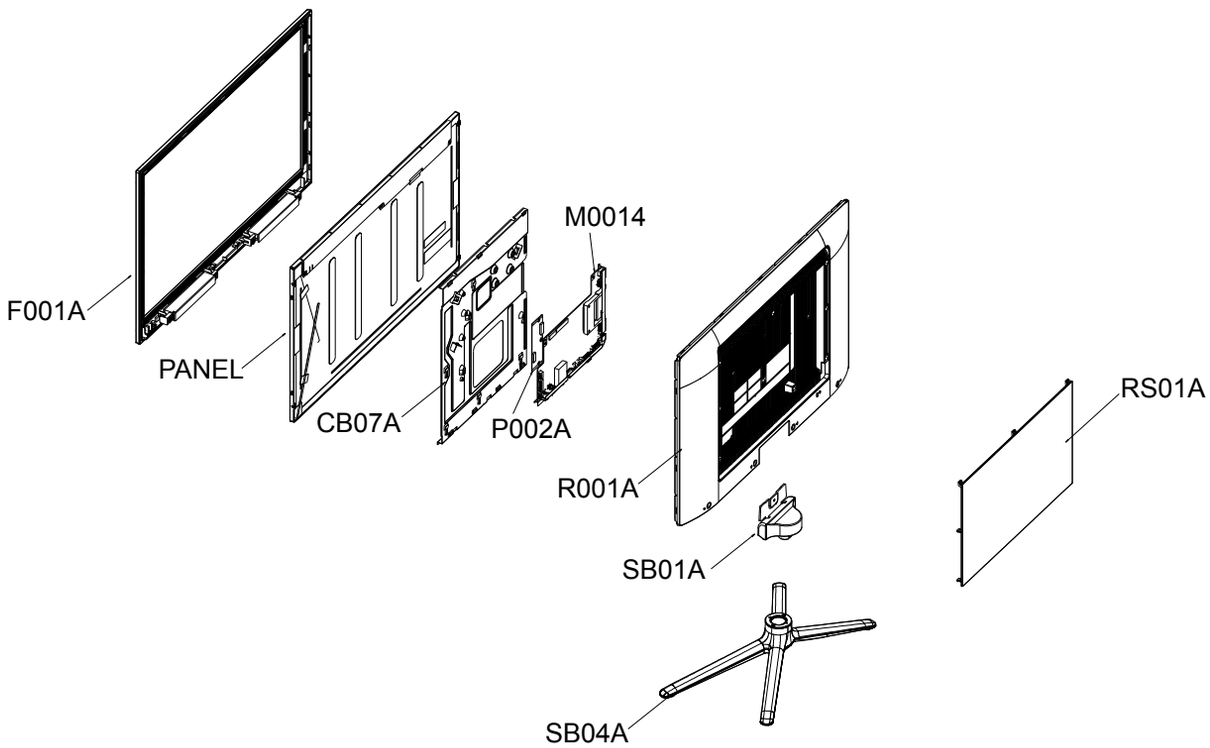
Product	Description	Code. No	Remark
	Remote Control & Batteries (AAA x 2)	BN59-01012A & 4301-000121	Samsung Electronics Service center
	Power Cord	3903-000525	
	Stand Base	BN96-15180B	
	D-Sub Cable	BN39-00244H	
	User Manual	BN59-01118A	
	Quick Setup Guide	BN68-00226R	
	Warranty Card (Not available in all locations)	BN68-03169A	
	Cleaning Cloth	BN63-01798B	

Product	Description	Code. No	Remark
	Holder-Wire	BN96-06529A	Samsung Electronics Service center
	DC-Adapter	BN44-00399A	
	Stereo Cable	BN39-01286A	
	SCART Gender	BN39-01154F	
	Composite Video,Audio Gender	BN39-01154H	
	Component Video Gender	BN39-01154C	

Memo

5. Exploded View & Part List

5-1. LS24F9DSM/EN - Exploded View



5-1-1. Parts List

Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
CB07A	BN96-15179A	ASSY BRACKET P-PCB;90-MFM,SECC,T0.8	1	SNA	
F001A	BN96-15176E	ASSY COVER P-FRONT;90-MFM,EUROPE,PC+PC V	1	SA	
M0014	BN94-03900C	ASSY PCB MAIN;LS24F9DSM/EN	1	SA	
P002A	BN44-00396A	AC VSS-LED DRIVER;90Series 24"(LED drive	1	SA	
PANEL	BN07-00794A	LCD-PANEL;M240HW01 V6,AU24016,6bit Hi-FR	1	SA	
R001A	BN96-15182A	ASSY COVER P-REAR;90-MFM,EUROPE,PC+ABS,V	1	SA	
RS01A	BN96-15178A	ASSY COVER P-REAR SUB;90-MFM,USA,PC+ABS,	1	SA	
SB01A	BN96-15861B	ASSY STAND P-BODY;90-MFM,PC+ABS,V0,BR002	1	SA	
SB04A	BN96-15180B	ASSY STAND P-BASE;90-MFM,EUROPE,PC+ABS,V	1	SA	
	BN96-15862A	ASSY BRACKET P-AV;90-MFM,PCM 0.35,BLK	1	SNA	

5-2. LS24F9DSM/EN - Parts List

Service Bom (**SA**: SERVICE AVAILABLE, **SNA**: SERVICE NOT AVAILABLE)

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
0.1		AA01-00004A	FOIL;2000,2000,NTR,SEH	1	SNA	
0.1	T0603	AA69-00926C	PALLET;,WOOD,1100MM,1300MM,120MM,7KG,TIN	1	SNA	
0.1	T0077	BH68-00329D	LABEL BAR CODE-02;NO CE,NO WT`Y,MPRII,LA	1	SNA	
0.1	T0527	BH68-40364A	LABEL-SUMMARY;G52,G72,ART,100G,WHT,BLK,W	1	SNA	
0.1	PANEL	BN07-00794A	LCD-PANEL;M240HW01 V6,AU24016,6bit Hi-FR	1	SA	
0.1	EC29	BN39-00244H	CBF SIGNAL-D-SUB TO D-SUB;D-sub cable,15	1	SA	
0.1	P002A	BN44-00396A	AC VSS-LED DRIVER;90Series 24"(LED drive	1	SA	
0.1	P001A	BN44-00399A	DC VSS(A);AD-6314C,90SERIES MFM,110/230V	1	SA	
0.1	T0527	BN68-00129A	LABEL SHIPPING-00;LABEL SHIPPING,ART-PAP	1	SNA	
0.1	CCM1	BN68-01570A	LABEL RATING;ALL,SS,PE,T0.05,90,45,Dark	1	SNA	
0.1		BN69-02114A	PAD PACKING-EDGE;CB,B800,W200,L2200,YEL,	1	SNA	
0.1		BN69-03934A	WRAP STRETCH FILM;All,HDPE,0.012,500,300	1	SNA	
0.1		BN81-02321A	BAG-AIR;LIGHT FLEX PLASTIK,PE WHITE,L120	1	SNA	
0.1	M0014	BN94-03900C	ASSY PCB MAIN;LS24F9DSM/EN	1	SA	
..2		0202-001557	SOLDER-CREAM;LST57-A,D38-63,42SN/57BI/1A	3	SNA	
..2		0202-001608	SOLDER-WIRE FLUX;LFC7-107,D0.8,99.3Sn/0.	0.25	SNA	
..2		3701-001698	CONNECTOR-DSUB;15P,3ROW,FEMALE,ANGLE,NI	1	SA	
..2	HB01A	3711-000058	HEADER-BOARD TO CABLE;BOX,4P,1R,2.5MM,AN	1	SA	
..2	CN906	3711-004105	CONNECTOR-HEADER;BOX,8P,1R,2.5mm,ANGLE,S	1	SA	
..2	DRVCN1	3711-004379	HEADER-BOARD TO CABLE;BOX,4P,1R,2mm,STRA	1	SA	
..2		3722-003128	JACK-DC POWER;4P,6.7PI,SN,BLK	1	SNA	
..2	ET01	BN40-00196A	TUNER;DTOS40FVH082A,DTOS40FVH082A,DVB-T/	1	SA	
..2		BN97-04732C	ASSY SMD;LS24F9DSM/EN,BN94-03900C	1	SNA	
...3		0202-001477	SOLDER-CREAM;LST309-M,D20~45um,96.5Sn/3A	4.854	SNA	
...3	DS01A	0401-001056	DIODE-SWITCHING;MMBD4148SE,100V,200mA,SO	12	SA	
...3		0403-001180	DIODE-ZENER;BZX84C6V2,5.8-6.6V,350mW,SOT	1	SA	
...3		0403-001783	DIODE-ZENER;BZB84-C6V2,5.8/6.6V,300mW,SO	16	SNA	
...3	D0254	0404-001404	DIODE-SCHOTTKY;BAT721C,40V,200mA,SOT-23,	1	SA	
...3	T0139	0406-001200	DIODE-TVS;RCLAMP0504F,6/-/-V,150W,SC-70	1	SA	
...3	T0139	0406-001271	DIODE-TVS;RCLAMP0524P,6/-/-V,150W,SLP251	4	SNA	
...3	SD3	0407-000114	DIODE-SWITCHING;KDS184,80V,100mA,SOT-23,	2	SNA	
...3	KQ1	0501-000279	TR-SMALL SIGNAL;KSA1182-Y,PNP,150mW,SOT-	1	SA	
...3	Q101	0501-000445	TR-SMALL SIGNAL;KTC3875S-Y,NPN,150mW,SOT	9	SA	
...3	PQ02	0501-002080	TR-SMALL SIGNAL;2SC2412K,NPN,200mW,SC-59	2	SA	
...3	CEQ2	0505-000110	FET-SILICON;2N7002,N,60V,115mA,7.5ohm,0.	2	SA	
...3		0505-001844	FET-SILICON;SI4435DDY-T1-GE3,P,-30V,-11.	3	SA	
...3	M0215	0801-002198	IC-CMOS LOGIC;74LVC14,INVERTER,SOP,14P,1	1	SA	
...3	IC104	0801-002630	IC-CMOS LOGIC;74AHCT1G08,2-INPUT AND GAT	1	SA	
...3	IC104	0801-003330	IC-CMOS LOGIC;Octal buffer,DQFN,20P,4.5x	2	SA	
...3	IC104	0802-001012	IC-CMOS LOGIC;74LCX245,TRANSCEIVER,DQFN,	1	SNA	
...3		1006-001266	IC-LINE TRANSCEIVER;3232,TSSOP,16P,174MI	1	SA	
...3		1006-001474	IC-LINE DRIVER;DRV604PWP,HPSSOP,28P,9.8x	1	SA	
...3	IC112	1103-000129	IC-EEPROM;24C02,2Kbit,256x8,SOP,8P,5x4mm	2	SA	
...3	IC112	1103-001310	IC-EEPROM;24LC02B,256X8BIT,SOIC,8P,3.91X	2	SA	
...3		1103-001487	IC-EEPROM;AT24C256C-SSHL-T,256Kbit,32Kx8	1	SA	
...3		1105-002153	IC-DDR2 SDRAM;K4T1G164QF-BCF8,DDR2,1Gbit	2	SNA	
...3		1201-002994	IC-POWER AMP;NTP-7300S,QFN,56P,8x8mm,DUA	1	SA	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3	T0087	1203-001815	IC-POSI.FIXED REG.;78M09,TO-252,3P,PLAST	1	SA	
...3	T0087	1203-002835	IC-POSI.FIXED REG.;KIA7805AF,DPAK,3P,6.6	1	SA	
...3	T0087	1203-002898	IC-POSI.FIXED REG.;G950T45R,T0-252,3P,6.	1	SA	
...3		1203-004364	IC-VOL. DETECTOR;RT9818C-42PV,SOT-23,3P,	1	SA	
...3		1203-006013	IC-DC/DC CONVERTER;AOZ1031AI,SO-8,8P,4.9	3	SA	
...3		1203-006017	IC-VOL. DETECTOR;RT9824GJ8,TSOT23,8P,2.9	1	SA	
...3	IC012	1203-006138	IC-POSI.ADJUST REG.;AP1117DGZ-13-89,TO-2	1	SA	
...3		1203-006142	IC-DC/DC CONVERTER;BD8924G,5P,2.9x1.6x1.	1	SA	
...3		1203-006337	IC-POSI.FIXED REG.;G9091-330T11U,SOT-23-	1	SA	
...3		1204-003197	IC-DECODER;SEMS18-LF,LFBGA,568P,20x20mm,	1	SA	
...3		1205-003201	IC-BUS SWITCH;TC7WB125FK,SSOP,8P,2x2.3mm	1	SA	
...3		1205-003479	IC-SWITCH;TPS2051BDBVR,SOT-23,5P,2.9x1.6	1	SA	
...3		1205-003735	IC-SWITCH;AP2151WG-7,SOT25,5P,2.9x1.6mm,	1	SA	
...3		1405-001271	VARISTOR;20Vdc,5A,1.0x0.5x0.6mm,TP	25	SA	
...3	PR4	2007-000052	R-CHIP;10Kohm,1%,1/10W,TP,1608	1	SA	
...3	ND51C2	2007-000066	R-CHIP;20Kohm,1%,1/10W,TP,1608	1	SNA	
...3	PR6	2007-000072	R-CHIP;47ohm,5%,1/10W,TP,1608	4	SNA	
...3	AR158	2007-000077	R-CHIP;470ohm,5%,1/10W,TP,1608	2	SA	
...3	AR150	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	1	SA	
...3	FMR4	2007-000080	R-CHIP;2Kohm,5%,1/10W,TP,1608	1	SNA	
...3	MROP1	2007-000090	R-CHIP;10Kohm,5%,1/10W,TP,1608	1	SA	
...3	KAR9	2007-000093	R-CHIP;20Kohm,5%,1/10W,TP,1608	1	SA	
...3	MR604	2007-000137	R-CHIP;2Kohm,5%,1/16W,TP,1005	2	SNA	
...3	R105	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	24	SA	
...3	AR49	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	13	SNA	
...3	MR306	2007-000141	R-CHIP;2.2Kohm,5%,1/16W,TP,1005	6	SNA	
...3	AVR73	2007-000142	R-CHIP;2.7Kohm,5%,1/16W,TP,1005	1	SA	
...3	R319	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	57	SNA	
...3	R104	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	52	SA	
...3	MR36	2007-000153	R-CHIP;22Kohm,5%,1/16W,TP,1005	7	SNA	
...3	AR43	2007-000155	R-CHIP;27Kohm,5%,1/16W,TP,1005	2	SNA	
...3	MR13	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	7	SNA	
...3	DR39	2007-000162	R-CHIP;100Kohm,5%,1/16W,TP,1005	6	SNA	
...3		2007-000165	R-CHIP;200Kohm,5%,1/16W,TP,1005	1	SNA	
...3	R509	2007-000170	R-CHIP;1Mohm,5%,1/16W,TP,1005	1	SNA	
...3	R111	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	10	SNA	
...3	HDR17	2007-000172	R-CHIP;10ohm,5%,1/16W,TP,1005	2	SNA	
...3	R338	2007-000173	R-CHIP;22ohm,5%,1/16W,TP,1005	22	SNA	
...3	UR23	2007-000174	R-CHIP;47ohm,5%,1/16W,TP,1005	2	SNA	
...3	PFRF2	2007-000219	R-CHIP;1.2Kohm,1%,1/10W,TP,1608	1	SNA	
...3	ER13	2007-000669	R-CHIP;2Kohm,1%,1/10W,TP,1608	2	SNA	
...3	R299	2007-000772	R-CHIP;33Kohm,1%,1/10W,TP,1608	2	SA	
...3	R124	2007-000775	R-CHIP;33Kohm,5%,1/16W,TP,1005	2	SNA	
...3	HR10	2007-000962	R-CHIP;5.1Kohm,1%,1/10W,TP,1608	1	SA	
...3	R858	2007-001007	R-CHIP;51Kohm,1%,1/10W,TP,1608	1	SA	
...3		2007-001285	R-CHIP;5.6ohm,5%,1/16W,TP,1005	2	SA	
...3	OTR1	2007-001292	R-CHIP;33ohm,5%,1/16W,TP,1005	36	SNA	
...3	DR43	2007-001298	R-CHIP;51ohm,5%,1/16W,TP,1005	2	SNA	
...3	DR1	2007-001301	R-CHIP;68ohm,5%,1/16W,TP,1005	10	SA	
...3	R326	2007-001325	R-CHIP;3.3Kohm,5%,1/16W,TP,1005	2	SNA	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3		2007-001333	R-CHIP;18Kohm,5%,1/16W,TP,1005	6	SNA	
...3	PR24	2007-002970	R-CHIP;56ohm,5%,1/16W,TP,1005	17	SA	
...3	HDR8	2007-007095	R-CHIP;390ohm,5%,1/16W,TP,1005	1	SA	
...3	DR4	2007-007142	R-CHIP;10Kohm,1%,1/16W,TP,1005	3	SNA	
...3		2007-007156	R-CHIP;1ohm,5%,1/16W,TP,1005	5	SNA	
...3		2007-007318	R-CHIP;1Kohm,1%,1/16W,TP,1005	4	SNA	
...3		2007-007334	R-CHIP;200Kohm,1%,1/16W,TP,1005	2	SNA	
...3	DR157	2007-007650	R-CHIP;274ohm,1%,1/10W,TP,1608	1	SA	
...3	R8	2007-007721	R-CHIP;560ohm,1%,1/10W,TP,1608	1	SA	
...3		2007-007861	R-CHIP;62Kohm,1%,1/16W,TP,1005	2	SA	
...3	MR11	2007-008015	R-CHIP;75ohm,1%,1/16W,TP,1005	14	SA	
...3		2007-008275	R-CHIP;30Kohm,1%,1/16W,TP,1005	1	SNA	
...3	ZRN10	2011-001261	R-NETWORK;33ohm,5%,1/16W,L,CHIP,8P,TP,2.	2	SA	
...3	DAR09	2011-001262	R-NETWORK;22ohm,5%,1/16W,L,CHIP,8P,TP,2.	12	SA	
...3		2011-001264	R-NETWORK;10ohm,5%,1/16W,L,CHIP,8P,TP,2.	6	SNA	
...3	HRP2	2011-001344	R-NETWORK;100ohm,5%,1/16W,L,CHIP,8P,TP,2	2	SA	
...3		2011-001402	R-NETWORK;56ohm,5%,1/16W,L,CHIP,8P,TP,2.	8	SA	
...3		2011-001427	R-NETWORK;0ohm,5%,1/16W,L,CHIP,8P,TP,2.0	6	SNA	
...3		2011-001449	R-NETWORK;22ohm,5%,1/16W,L,4P,TP,1010	5	SA	
...3		2011-001587	R-NETWORK;100ohm,5%,1/16W,L,CHIP-V,4P,TP	2	SNA	
...3	PC43	2203-000233	C-CER,CHIP;0.1nF,5%,50V,C0G,TP,1005	4	SA	
...3	C134	2203-000257	C-CER,CHIP;10nF,10%,50V,X7R,TP,1608	1	SA	
...3	MC302	2203-000425	C-CER,CHIP;.018nF,5%,50V,C0G,TP,1005	4	SA	
...3	C254	2203-000438	C-CER,CHIP;1nF,10%,50V,X7R,TP,1005	15	SA	
...3	C507	2203-000489	C-CER,CHIP;2.2nF,10%,50V,X7R,TP,1005	4	SA	
...3	FC04	2203-000552	C-CER,CHIP;0.02nF,5%,50V,C0G,1608	2	SNA	
...3	V1233	2203-000575	C-CER,CHIP;220nF,10%,25V,X7R,TP,2012	6	SNA	
...3	AD480	2203-000679	C-CER,CHIP;0.027nF,5%,50V,C0G,1005	3	SNA	
...3	DC25	2203-000812	C-CER,CHIP;.033nF,5%,50V,C0G,TP,1005	2	SA	
...3	CK40B	2203-000838	C-CER,CHIP;0.39NF,5%,50V,C0G,TP,1608	2	SNA	
...3	HDC5	2203-001072	C-CER,CHIP;0.056nF,5%,50V,NP0,1005	4	SA	
...3	C3A09	2203-001103	C-CER,CHIP;6.8nF,10%,50V,X7R,TP,1608	1	SA	
...3	AD480	2203-001428	C-CER,CHIP;470nF,10%,50V,X7R,TP,2012	4	SNA	
...3	C3303	2203-002041	C-CER,CHIP;0.47nF,10%,50V,X7R,1608	1	SA	
...3	AD480	2203-002285	C-CER,CHIP;10nF,10%,50V,X7R,1005	13	SNA	
...3	AD480	2203-002525	C-CER,CHIP;0.56nF,10%,50V,X7R,TP,1005	6	SNA	
...3	C33	2203-002687	C-CER,CHIP;1.2nF,10%,50V,X7R,TP,1005	4	SA	
...3	AAC1	2203-005249	C-CER,CHIP;100nF,10%,50V,X7R,TP,1608	10	SNA	
...3	TE3	2203-005261	C-CER,CHIP;1000nF,10%,25V,X7R,TP,3216	1	SNA	
...3	AD480	2203-005344	C-CER,CHIP;22nF,10%,25V,X7R,TP,1005,-	1	SNA	
...3	AD480	2203-005393	C-CER,CHIP;.005nF,0.1pF,50V,NP0,TP,1005	1	SNA	
...3	AD480	2203-005809	C-CER,CHIP;1000nF,10%,16V,X7R,TP,2012	1	SC	
...3	AD480	2203-006126	C-CER,CHIP;47nF,10%,16V,X7R,TP,1005	24	SNA	
...3	PC11	2203-006141	C-CER,CHIP;1000nF,10%,16V,X5R,1608	3	SNA	
...3	C102	2203-006158	C-CER,CHIP;100nF,10%,16V,X7R,TP,1005	81	SNA	
...3	JC10	2203-006324	C-CER,CHIP;2200nF,10%,10V,X5R,1608	7	SA	
...3	AD480	2203-006336	C-CER,CHIP;10000nF,10%,25V,X5R,3216	30	SA	
...3	C125	2203-006361	C-CER,CHIP;10000nF,10%,10V,X5R,TP,2012	39	SC	
...3	HE4	2203-006474	C-CER,CHIP;22000nF,20%,6.3V,X5R,2012	8	SA	
...3	HDC11	2203-006562	C-CER,CHIP;1000nF,10%,10V,X5R,TP,1005	14	SNA	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
...3	AD480	2203-006824	C-CER,CHIP;4700nF,10%,10V,X5R,1608	1	SNA	
...3	AD480	2203-006841	C-CER,CHIP;1000nF,10%,16V,X5R,TP,1005	1	SNA	
...3	AD480	2203-007513	C-CER,CHIP;10000nF,10%,10V,X5R,TP,1608	1	SA	
...3	T0052	2703-000158	INDUCTOR-SMD;1uH,10%,2012	2	SA	
...3	T0052	2703-000296	INDUCTOR-SMD;680nH,10%,1608	1	SA	
...3	VL6	2703-000398	INDUCTOR-SMD;10uH,10%,3225	2	SA	
...3	T0052	2703-001239	INDUCTOR-SMD;3.3uH,10%,1608	3	SA	
...3	T0052	2703-002801	INDUCTOR-SMD;3.9uH,20%,7070	1	SA	
...3	T0052	2703-003150	INDUCTOR-SMD;4.7uH,20%,5050	4	SNA	
...3	T0052	2703-003559	INDUCTOR-SMD;4.7uH,20%,8080	3	SNA	
...3		2703-003890	INDUCTOR-SMD;47uH,10%,3225	1	SA	
...3	X202	2801-003326	CRYSTAL-SMD;24MHz,30ppm,28-ABX,20pF,50oh	1	SA	
...3	X202	2801-003773	CRYSTAL-SMD;12MHz,30ppm,28-AAN,20pF,50oh	1	SA	
...3	F103	2901-001506	FILTER-EMI SMD;5V,0.13A,0pF,2x1x0.5mm,TP	4	SA	
...3	T0568	3301-001236	BEAD-SMD;60ohm,1608	5	SA	
...3	T0568	3301-001404	BEAD-SMD;30ohm,2012,TP,15.9OHM/30MHz	2	SA	
...3	T0568	3301-002039	BEAD-SMD;26ohm,1608,TP	38	SA	
...3	T0313	3404-001207	SWITCH-TACT;12V,50mA,160gf,6.2X6.2,SPST	1	SA	
...3		3701-001293	CONNECTOR-HDMI;19P,2R,FEMALE,SMD-A,AU	2	SA	
...3	CN906	3707-001095	CONNECTOR-OPTICAL;SMD-A(Ultra Slim),SPDI	1	SA	
...3	AC510	3708-001150	CONNECTOR-FPC/FFC/PIC;30P,1mm,SMD-A,SN,Y	1	SA	
...3		3710-002276	SOCKET-INTERFACE;24P,1R,0.5mm,SMD-A,AU,B	1	SA	
...3	HB01A	3711-005471	HEADER-BOARD TO CABLE;BOX,12P,1R,1.25mm,	1	SA	
...3		3722-003044	JACK-USB;4P/1C,NI,BLK,SMD-A,A-TYPE	1	SA	
...3		BN41-01531A	PCB MAIN;90-MFM,FR-4,4,1.2T,212x158	1	SNA	
...3		BN97-04878A	ASSY MICOM;90-MFM,2010.06.08,T-MSXMDEUC,	1	SNA	
....4		1107-001940	IC-NAND FLASH;KFG1G16U2D-HIB6,1Gbit,64Mx	1	SNA	
...3		BN97-04879A	ASSY MICOM;90-MFM,2010.06.08,T-MSXMDEUS-	1	SNA	
....4	IC520	0903-001651	IC-MICROCONTROLLER;61P802-RG480WT,LQFP,4	1	SNA	
...3	D0254	0404-001271	DIODE-SCHOTTKY;SSA34,40V,3000mA,SMA,TP	1	SA	
...3	AD480	2203-005968	C-CER,CHIP;4.7NF,10%,50V,X7R,TP,1005	2	SNA	
..2	T0066	BP62-00017A	HEAT SINK-ES;SP-50L2HX,A6063S,T2.0,26.2,	1	SNA	
..2		3709-001641	CONNECTOR-CARD SLOT;68P(U/SLIM 60mm) W/L	1	SNA	
..2		3722-003156	JACK-PHONE;1/7P,NI,LAUREL-GREEN,ANGLE	2	SA	
..2		3722-003158	JACK-PHONE;1/7P,NI,BLK,ANGLE	2	SA	
..2		3722-003159	JACK-PHONE;1/7P,NI,YEL,ANGLE	1	SA	
0.1	ACCE1	BN96-15345F	ASSY ACCESSORY;LS24F9DSM/EN	1	SNA	
..2	T0120	4301-000121	BATTERY-MN;1.5V,R03,10.5x44.5m,HOLDER,7.	2	SNA	
..2		AA68-03576C	MANUAL FLYER-LEAFLET;comm,Samsung,Russia	1	SNA	
..2		AA69-02656A	BAG ACCESSORY;PJTV,LDPE,T0,05,L400,W280,	1	SNA	
..2	M0019	BH68-70448A	CARD-01;TFT LCD,SRC,RUSSIA,S/W,120,W210*	1	SNA	
..2	M0114	BN39-01154C	CBF SIGNAL;Chelsea Slim, STEREO Plug to	1	SA	
..2	M0114	BN39-01154F	CBF SIGNAL;UE40B7000WWXXC,24P/20P,30AWG,	1	SA	
..2	M0114	BN39-01154H	CBF SIGNAL;UE40B7000WWXXC,RCA 3PIN,30AWG	1	SA	
..2	EC08	BN39-01286A	CBF SIGNAL-STEREO;3p,UL2547, Audio Stand	1	SA	
..2		BN59-01118A	S/W DRIVER-00,IB;FX2490HD,Europe,Samsung	1	SNA	
..2	M9889	BN63-01798B	CLOTH-CLEAN;cloth,180,200,sea blue,ToC	1	SNA	
..2		BN68-00226R	MANUAL FLYER-03,WARRANTY CARD;comm,Samsu	1	SNA	
..2		BN68-01925G	MANUAL FLYER-WARRANTY CARD;comm,Samsung,	1	SNA	
..2		BN68-02462B	LABEL-STICKER;CIS,T0.05,93,40,TV-MONITOR	1	SNA	
..2		BN68-03169A	MANUAL FLYER-QSG;FX2490HD,Samsung,20Lang	1	SNA	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
..2	T0010	BN96-06529A	ASSY HOLDER P-WIRE;MCKINLEY,ABS HB,BK23	1	SA	
...3		6902-000336	BAG ZIPPER;LDPE,T0.05,W70,L80,TRP,0.500g	1	SNA	
...3	M0114	BN61-03555A	HOLDER-WIRE;MCKINLEY,ABS HB,BK26	1	SNA	
..2		BN96-13879F	ASSY ACCESSORY-SCREW;FX2490HD,6001-00058	1	SNA	
...3	T0081	6001-000581	SCREW-MACHINE;PH,+,M4,L12,NI PLT,SWRCH18	2	SNA	
...3	T0524	6902-001169	BAG PE;LDPE,T0.1,W60,L60,Sealing	1	SNA	
..2	EC11	3903-000525	CBF-POWER CORD;DT,CEE,LP-21L,250V,2.5A,B	1	SA	
..2	EC29	BN39-00244H	CBF SIGNAL-D-SUB TO D-SUB;D-sub cable,15	1	SA	
..2		BN68-02186C	MANUAL FLYER-TOC GUIDE;ALL,SAMSUNG,36LEN	1	SNA	
0.1		BN96-15776A	ASSY MISC P-SKD;LS24F9DSM/EN,JASZ	1	SNA	
..2	M0081	6003-000115	SCREW-TAPTYPE;BH,+,B,M3,L6,ZPC(BLK),SWRC	6	SNA	
..2	SCREW	6003-001782	SCREW-TAPTYPE;BH,+,B,M4,L12,ZPC(BLK),SWR	4	SA	
..2	T0562	6046-001014	STAND OFF;#4-40,L6,NI PLT,C3601	2	SNA	
..2	T0524	6902-000520	BAG PE;HDPE/NITRON,T0.015/T0.5(DOUBLE),W	1	SNA	
..2		BH68-00659J	LABEL BOX-00;ALL MODEL,MOJO 90G,90,95,WH	1	SNA	
..2	M2893	BN39-00419E	LEAD CONNECTOR;ECOFIT 25inch,UL1571#30,1	1	SA	
..2	T0074	BN59-01012A	REMOCON;TM950,SAMSUNG,20PIN SINGLE,48KEY	1	SA	
..2	HDP01	BN61-06644A	HOLDER-PCB;LC750,NYNOL66,V0	1	SNA	
..2		BN68-03146A	LABEL-MONITOR-POP;90 MFM POP,WW,PET,T0.0	1	SNA	
..2		BN69-05228A	CUSHION-01,SET;90 Series 24",EPS,M50	1	SNA	
..2		BN69-05327A	BOX-SET;F2490HD,CB,A-01,SW2,YEL,W640,D53	1	SNA	
..2	M0245	BN96-02895A	ASSY MISC P-01,HANDLE PACKING;ALL MODEL,	1	SNA	
...3		BN66-00007A	LEVER-TOP;ALL MODEL,LDPE,WHITE,5.8g	1	SNA	
...3		BN66-00008A	LEVER-BOTTOM;ALL MODEL,LDPE,WHITE,4.01g	1	SNA	
..2	FL06	BN96-12453X	ASSY CABLE P-FFC;90-MFM,FFC,JPC-S01703,2	1	SA	
..2	RS01A	BN96-15178A	ASSY COVER P-REAR SUB;90-MFM,USA,PC+ABS,	1	SA	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	0.3	SNA	
...3	RS01	BN63-07310A	COVER-REAR SUB;90 Series 24",ABS+PC,V0,B	1	SNA	
..2	CB07A	BN96-15179A	ASSY BRACKET P-PCB;90-MFM,SECC,T0.8	1	SNA	
...3		BN61-02428E	STUD-PEM;PNA,M4,D8,L10,ZPC(SIL),SUM24L	4	SNA	
...3	CB07	BN61-06725A	BRACKET-PCB;90 Series 24",EGI-SECC,T0.8	1	SNA	
...3	T0073	AA63-01413H	GASKET-EMI;42Q7,Fabric Type,2mm,10mm,78m	2	SNA	
...3	M0131	BH63-00104A	GASKET;POSEIDON,CONDUCTIVE FABRIC,2MM,10	2	SNA	
...3		BN60-00162X	SPACER-FOAM;FOAM,30000mm,Dark Gray,1T,15	0.05	SNA	
..2	R001A	BN96-15182A	ASSY COVER P-REAR;90-MFM,EUROPE,PC+ABS,V	1	SA	
...3	M0081	6003-000337	SCREW-TAPTYPE;BH,+,S,M4,L10,ZPC(BLK),SWR	1	SA	
...3	M0081	6003-001001	SCREW-TAPTYPE;FH,+,B,M3,L8,ZPC(BLK),SWRC	11	SNA	
...3	T0069	AA60-00091B	SPACER-FELT;FELT,100X10,BLK,T0.35	1	SNA	
...3		BN61-06726A	BRACKET-GUIDE STAND;90 Series 24",HGI,T2	1	SNA	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	0.5	SNA	
...3	R001	BN63-07307A	COVER-REAR;90 Series 24",ABS+PC,V0,BR002	1	SNA	
...3		BN68-02998A	LABEL-STICKER;WW,PET,T0.05,55,20,30MFM L	1	SNA	
...3		BN68-03075A	LABEL-TERMINAL SIDE;90series,PET,T0.05,E	1	SNA	
...3		BN68-03076A	LABEL-TERMINAL BOTTOM;90series,PET,T0.05	1	SNA	
...3	SB01A	BN96-15861B	ASSY STAND P-BODY;90-MFM,PC+ABS,V0,BR002	1	SA	
....4	M0081	6003-001001	SCREW-TAPTYPE;FH,+,B,M3,L8,ZPC(BLK),SWRC	3	SNA	
....4		BN63-07309B	COVER-STAND FRONT;90series,ABS+PC,V0,H/G	1	SNA	
....4		BN63-07311B	COVER-STAND REAR;90series,ABS+PC,V0,BR00	1	SNA	
....4	SH03A	BN96-15166A	ASSY HINGE P;90 Series 24",SM50C,T2.3	1	SNA	
..2	FL06	BN96-15355B	ASSY CABLE P-FFC;90-MFM,FFC,JPC-S01807,2	1	SA	
..2		BN73-00206A	SILICON/RUBBER-GAPPAD;UE40B7000WWXXC,SIL	1	SNA	

Level	Location No.	Code No.	Description & Specification	Q'ty	SA/SNA	Remark
..2	SB04A	BN96-15180B	ASSY STAND P-BASE;90-MFM,EUROPE,PC+ABS,V	1	SA	
...3	M0081	6003-001001	SCREW-TAPTYPE;FH,+,B,M3,L8,ZPC(BLK),SWRC	12	SNA	
...3		6902-000794	BAG PE;HDPE,T0.015,W300,L550,TRP,28,0,SU	1	SNA	
...3	SG01	BN61-06736A	GUIDE-STAND NECK;90Series 24",PC+GF,BLK,	1	SNA	
...3		BN63-07312B	COVER-STAND STAND;90series,ABS+PC,V0,BR0	1	SNA	
...3		BN63-07313B	COVER-STAND BOTTOM;90series,ABS+PC,VO,BR	1	SNA	
...3		BN63-07314B	COVER-STAND TOP(FL);90series,ABS HB,V0,P	1	SNA	
...3		BN63-07315B	COVER-STAND TOP(FR);90series,ABS HB,V0,P	1	SNA	
...3		BN63-07316B	COVER-STAND TOP(RL);90series,ABS HB,V0,P	1	SNA	
...3		BN63-07317B	COVER-STAND TOP(RR);90series,ABS HB,V0,P	1	SNA	
...3		BN68-02304C	LABEL-STICKER;WW,T0.05,50,10,LAVERDER 19	1	SNA	
...3		BN68-02482C	MANUAL FLYER-STAND;comm,Samsung,W/W,W/P8	1	SNA	
...3	AR011	BN73-00077A	RUBBER FOOT;MATISSE,BUMPON,#13.5,T2.0,GR	4	SNA	
..2		BN96-15862A	ASSY BRACKET P-AV;90-MFM,PCM 0.35,BLK	1	SNA	
...3	T0073	BH63-00008A	GASKET-EMI;IB10LO,CONDUCTIVE FABRIC,3MM,	2	SNA	
...3	HDP01	BN61-06644A	HOLDER-PCB;LC750,NYNOL66,V0	1	SNA	
...3	CB01	BN61-06723A	BRACKET-AV;90 Series 24",PCM T0.5 BLK,T0	1	SNA	
..2	F001A	BN96-15176E	ASSY COVER P-FRONT;90-MFM,EUROPE,PC+PC V	1	SA	
...3		BN60-00162V	SPACER-FOAM;FOAM,50000mm,Dark Gray,0.5T,	1.7	SNA	
...3	CCM1	BN63-02183D	COVER-SHEET;Rhcm,PE Vinyl,T0.05,680mm,20	0.5	SNA	
...3	F001	BN63-07305B	COVER-FRONT;90 Series 24",PC+PC,V0,TP001	1	SNA	
...3	FW04	BN64-01470A	WINDOW-RMC;90 Series 24",PC VIOLET,TP000	1	SNA	
...3	T0527	BN68-00798D	LABEL-ENERGY,STAR;L/M,W/W,PET,T0.05,9.3,	1	SNA	
...3		BN68-03130A	LABEL-STICKER;WW,ALL,Art Paper,19,8,"LED	1	SNA	
...3	SP01A	BN96-12945D	ASSY SPEAKER P;16ohm,4pin,5W,L650/R250,9	1	SA	
...3	FB01A	BN96-15735A	ASSY BOARD P-FUNCTION;LS24F9DSM/EN,CT500	1	SA	
..2		HA83-00057B	LP-TAPE-CELLULOSE;,HA02-030010,T0,046,W7	1.8	SNA	
0.1	EC11	3903-000525	CBF-POWER CORD;DT,CEE,LP-21L,250V,2.5A,B	1	SA	

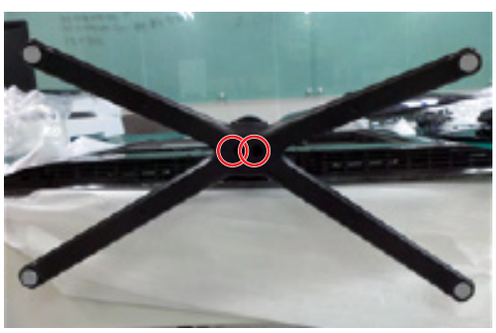
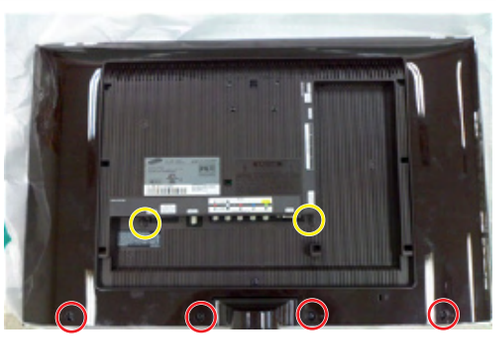
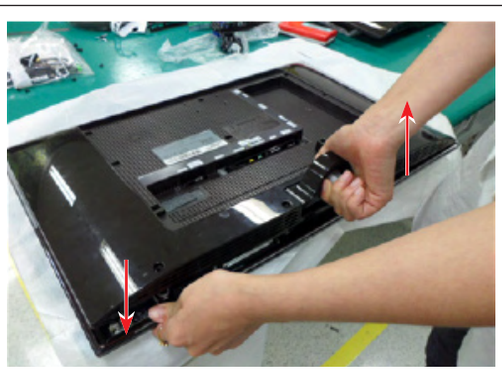
3. Disassembly and Assembly

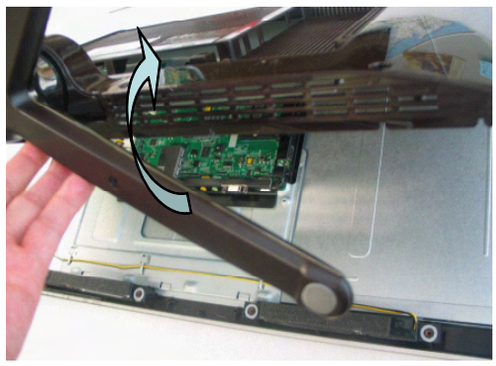
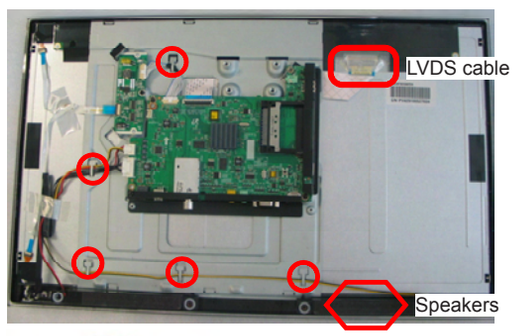
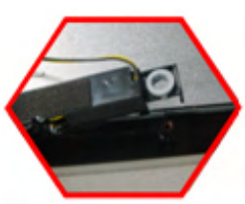
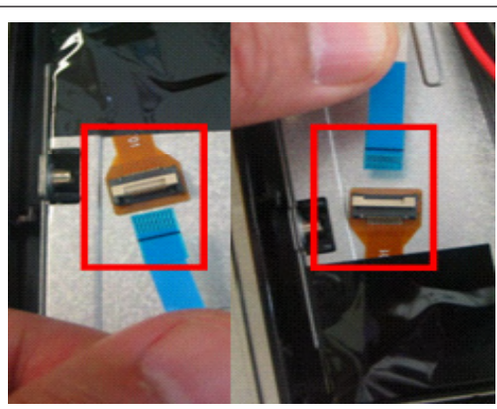
This section describes the disassembly and reassembly sequences for this monitor.

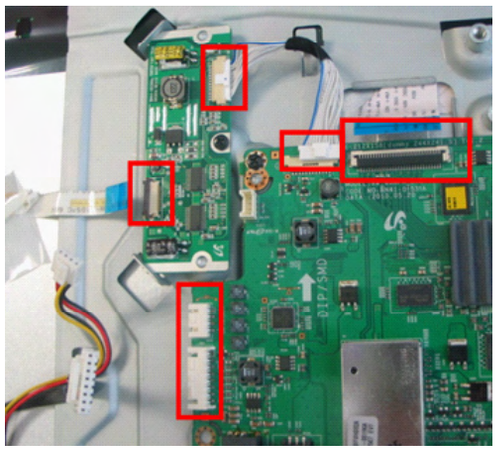
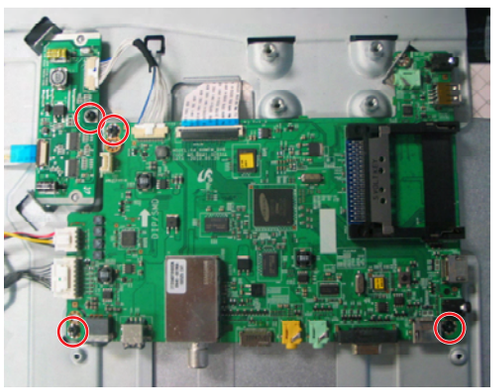
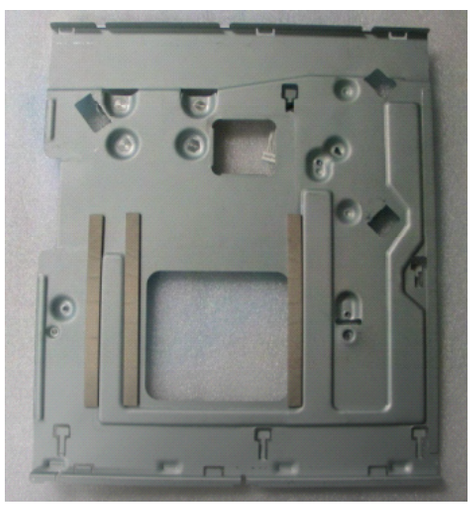
⚠ Warning: As this monitor has parts that are sensitive to static electricity, be careful when handling them.

3-1. Disassembly

⚠ Caution:
1. Turn the monitor off before beginning the disassembly process.
2. When disassembling the monitor, do not use any metal tools except for the provided jig.
3. Remove the signal cable and the power cord before beginning the disassembly.

Description	Photo	Screws
1. Lift up and remove the rear sub cover.		
2. Remove the 2 Screws Shown in the figure.		
3. Remove the 6(type A/B) screws shown in the figure.		Type A ◯ Type B ◯
4. Left hand hold a Cover-Front and Push Down following arow direction, the other hand hold a Hinge and then lift up.		

Description	Photo	Screws
5. Lift up and Remove the Rear cover.		
6. Lift up the cable holder and release Function & Speaker cables. 7. Disconnect the LVDS cable. 8. Disassemble the speaker.	 Function&Speaker wire LVDS cable  Speakers	
9. Unlock the Cable connectors and Disconnect the panel lamp Cables.		

Description	Photo	Screws
10. Disconnect Driver Board harness and Function & speaker Cable.		
11. Remove 4 screws and remove the main board and the driver board.		
12. Remove the Panel shield. 13. Remove the Panel.		

※ Reassembly procedures are in the reverse order of disassembly procedures.

Memo

4. Troubleshooting

4-1. First Checklist for Troubleshooting

■ Self-Test Feature Check

Your monitor provides a self test feature that allows you to check whether your monitor is functioning properly.

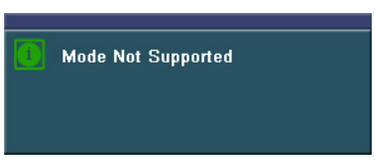
1. Turn off both your computer and the monitor.
2. Unplug the video cable from the back of the computer
3. Turn on the monitor.
   If the monitor is functioning properly, you will see a box in the illustration below. .

   This box appears during normal operation if the video cable becomes disconnected or damaged.

4. Turn off your monitor and reconnect the video cable; then turn on both your computer and the monitor.
   If your monitor screen remains blank after using the previous procedure, check your video controller and computer system; your monitor is functioning properly.

■ Warning Messages

If there is something wrong with the input signal, a message appears on the screen or the screen goes blank although the power indicator LED is still on. The message may indicate that the monitor is out of scan range or that you need to check the signal cable.



■ Environment

The location and the position of the monitor may influence the quality and other features of the monitor.

If there are any sub woofer speakers near the monitor, unplug and relocate the woofer to another room.

Remove all electronic devices such as radios, fans, clocks and telephones that are within 3 feet (one meter) of the monitor.

■ Useful Tips

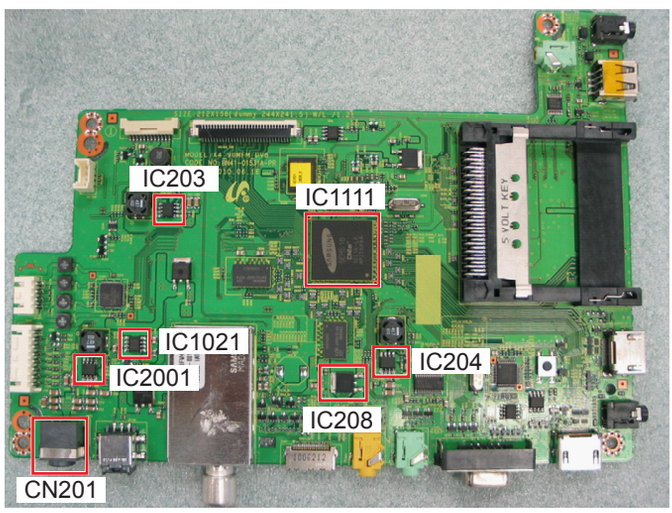
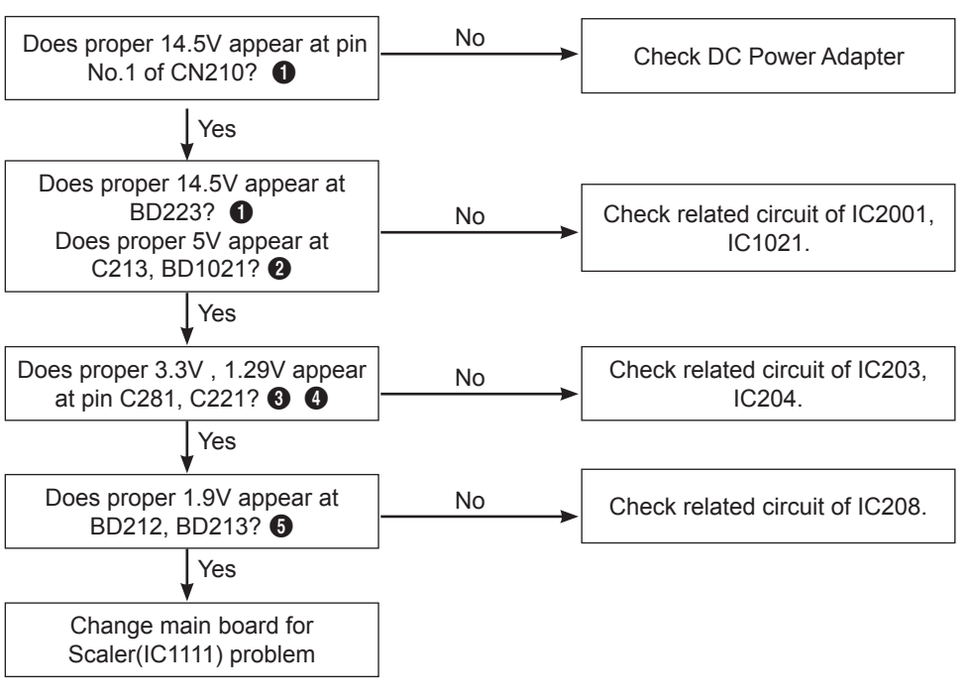
► A monitor recreates visual signals received from the computer.
Therefore, if there is trouble with the computer or the video card, this can cause the monitor to become blank, have poor coloring, noise, Video mode not supported, etc. In this case, first check the source of the problem, and then contact the Service Center or your dealer.

► Judging the monitor's working condition

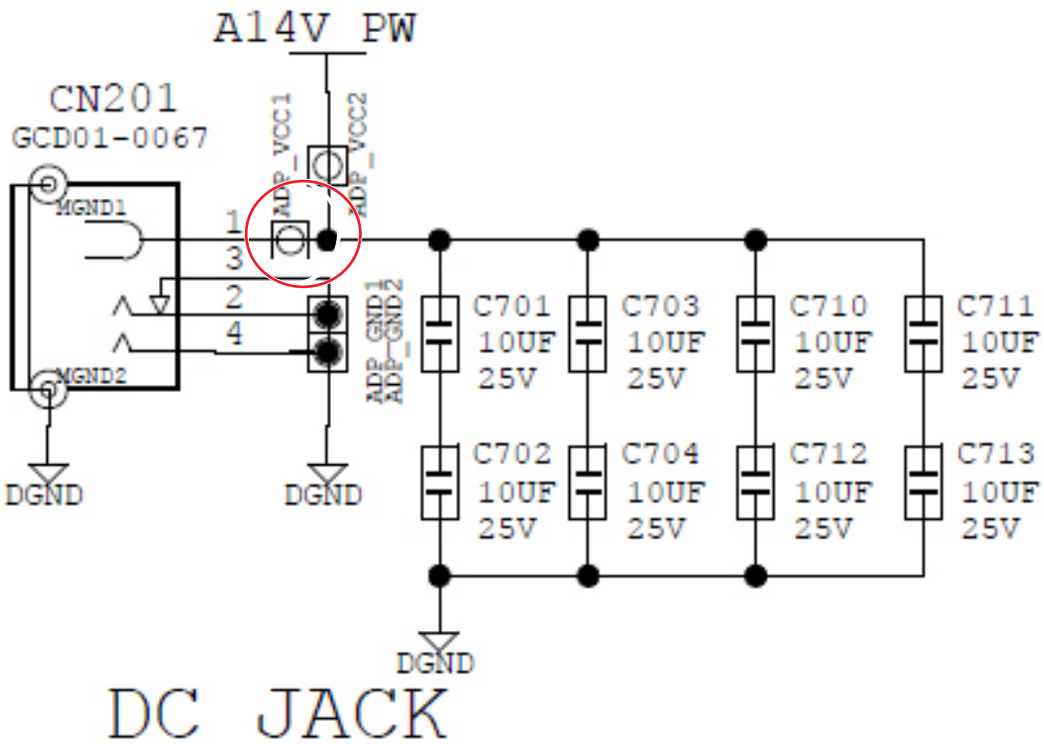
If there is no image on the screen or a "Not Optimum Mode", "Recommended Mode 1920 X 1080 60Hz" message comes up, disconnect the cable from the computer while the monitor is still powered on.

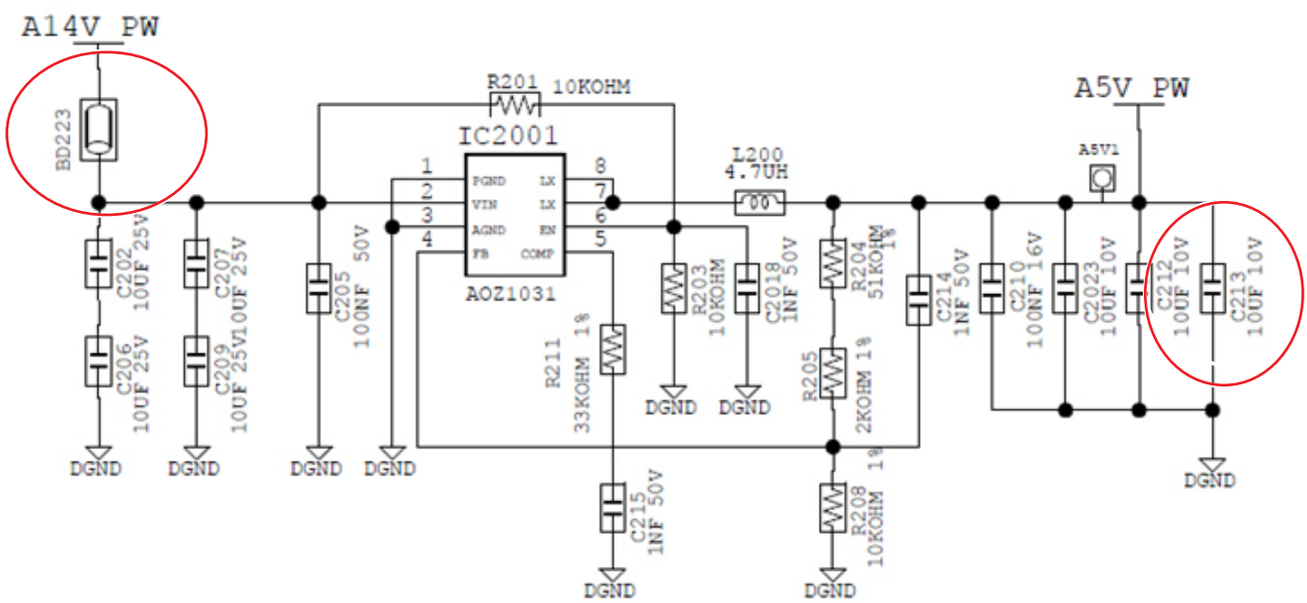
- If there is a message coming up on the screen or if the screen goes white, this means the monitor is in working condition.
- In this case, check the computer for trouble.

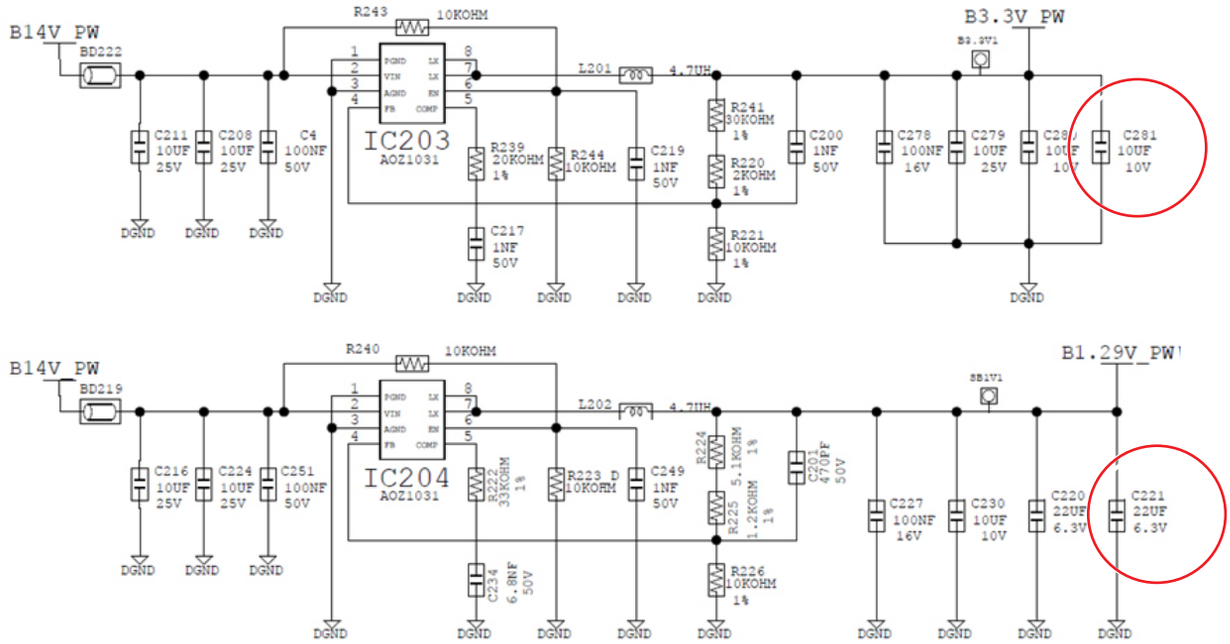
4-2. No Power

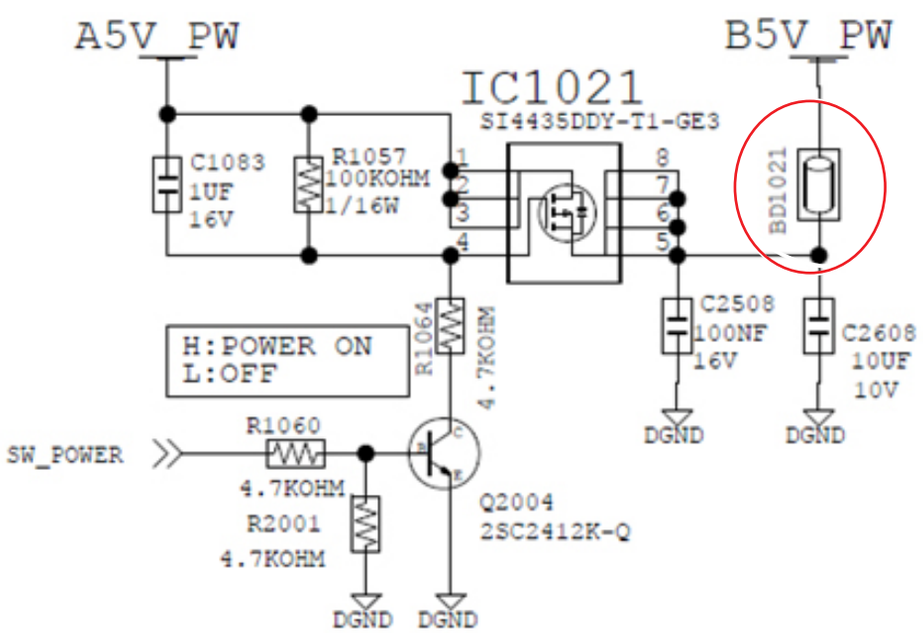
Symptom	– The LED on the front panel of the monitor does not work when the power is connected and the Power button is pressed.
Major checkpoints	– Check if the Power switch on the rear panel of the monitor has been turned on. – Check the SMPS fuse and the IP-Board output power. – Check the connection between the IP-Board and the Main Board inside the monitor. – Check the power part of the Main Board and check if a similar symptom appears at another output terminal.
Diagnostics	 Main Board Front 
Caution	Make sure Power connection before checking the Main Board.

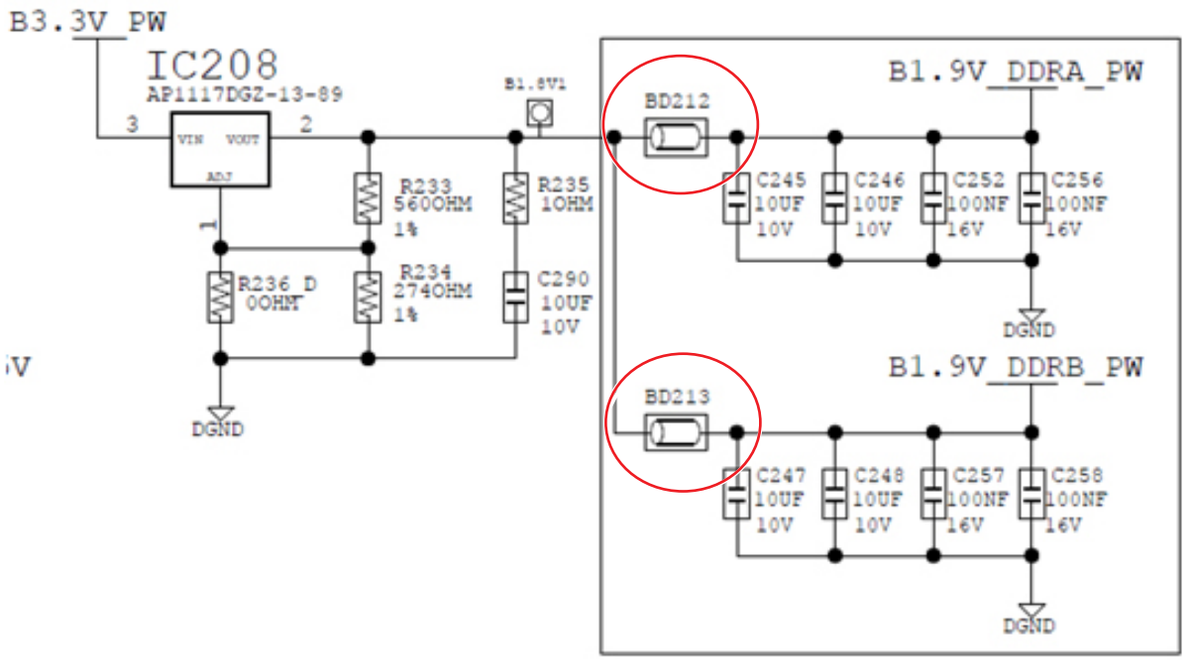
4-2-1. Circuit diagrams when the power does not turn on





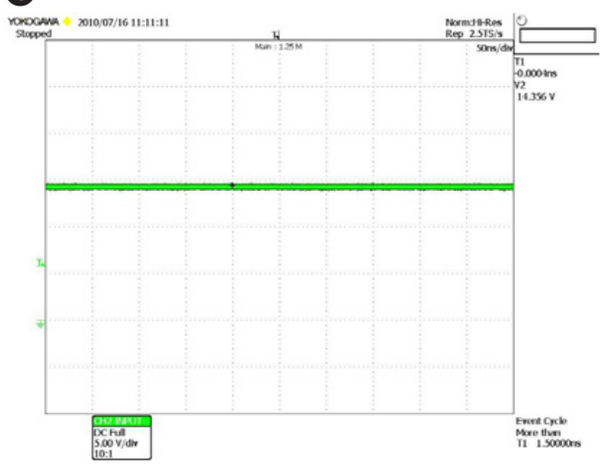

B14V_PW
BD222
R243
10KOHM
IC203
AOZ1031
L201
4.7UH
B3.3V_PW
C211 10UF 25V
C208 10UF 25V
C4 100NF 50V
R239 20KOHM 1%
R244 10KOHM
C219 1NF 50V
R241 30KOHM 1%
R220 2KOHM 1%
C200 1NF 50V
C217 1NF 50V
R221 10KOHM 1%
C278 100NF 16V
C279 10UF 25V
C281 10UF 10V
DGND
B14V_PW
BD219
R240
10KOHM
IC204
AOZ1031
L202
4.7UH
B1.29V_PW
C216 10UF 25V
C224 10UF 25V
C251 100NF 50V
R222 33KOHM 1%
R223_D 10KOHM
C249 1NF 50V
R224 5.1KOHM 1%
R225 1.2KOHM 1%
C201 470PF 50V
C234 6.8NF 50V
R226 10KOHM 1%
C227 100NF 16V
C230 10UF 10V
C220 22UF 6.3V
C221 22UF 6.3V
DGND


A5V_PW
B5V_PW
IC1021
SI4435DDY-T1-GE3
C1083 1UF 16V
R1057 100KOHM 1/16W
BD1021
H:POWER ON
L:OFF
R1064 4.7KOHM
C2508 100NF 16V
C2608 10UF 10V
SW_POWER
R1060 4.7KOHM
R2001 4.7KOHM
Q2004 2SC2412K-Q
DGND

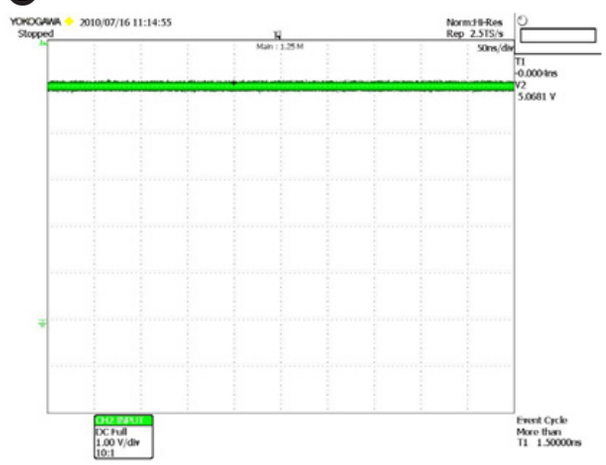

B3.3V_PW
IC208
AP1117DGZ-13-89
3
VIN
VOUT
ADJ
2
1
R233
560OHM
1%
R235
1OHM
R236_D
0OHMT
R234
274OHM
1%
C290
10UF
10V
DGND
B1.8V1
BD212
B1.9V_DDRA_PW
C245
10UF
10V
C246
10UF
10V
C252
100NF
16V
C256
100NF
16V
DGND
BD213
B1.9V_DDRB_PW
C247
10UF
10V
C248
10UF
10V
C257
100NF
16V
C258
100NF
16V
DGND

4-2-2. Waveforms

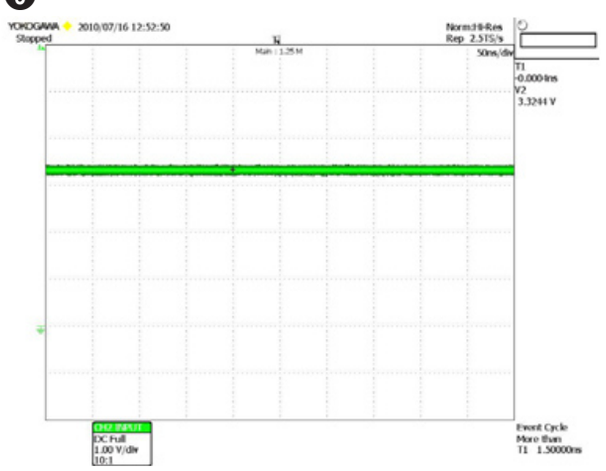
❶



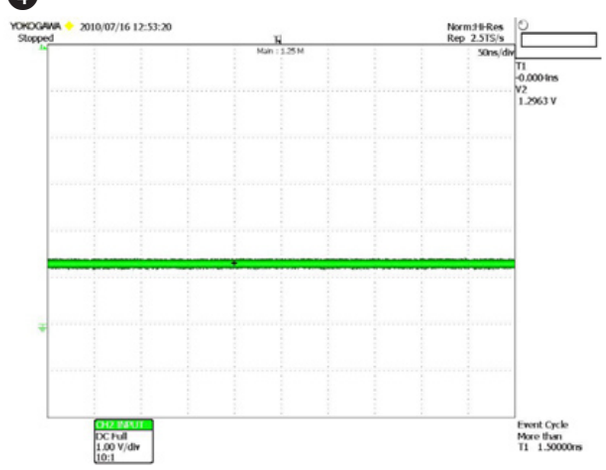
❷



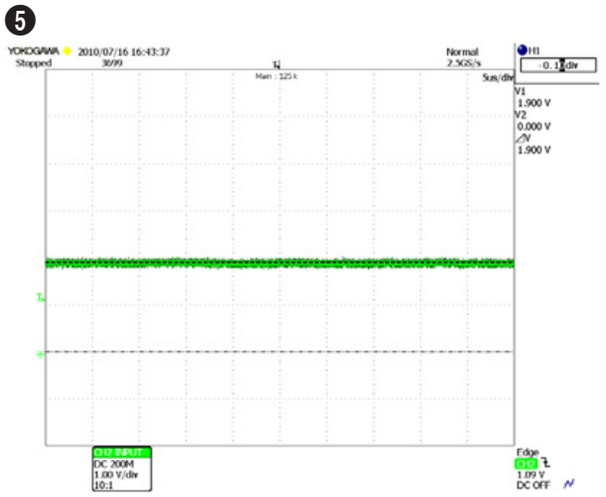
❸



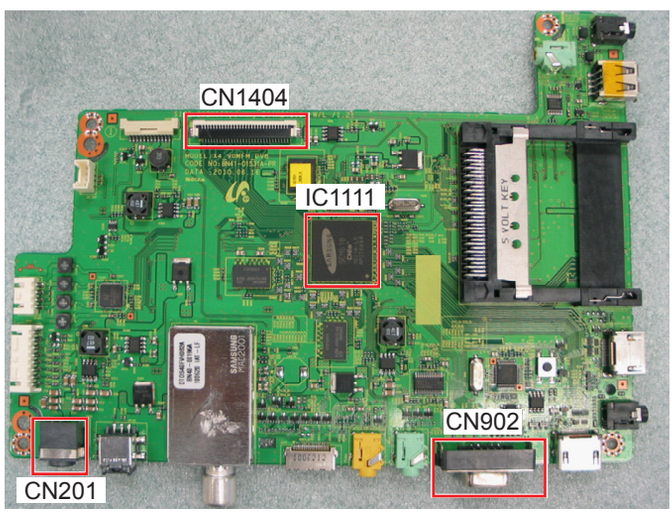
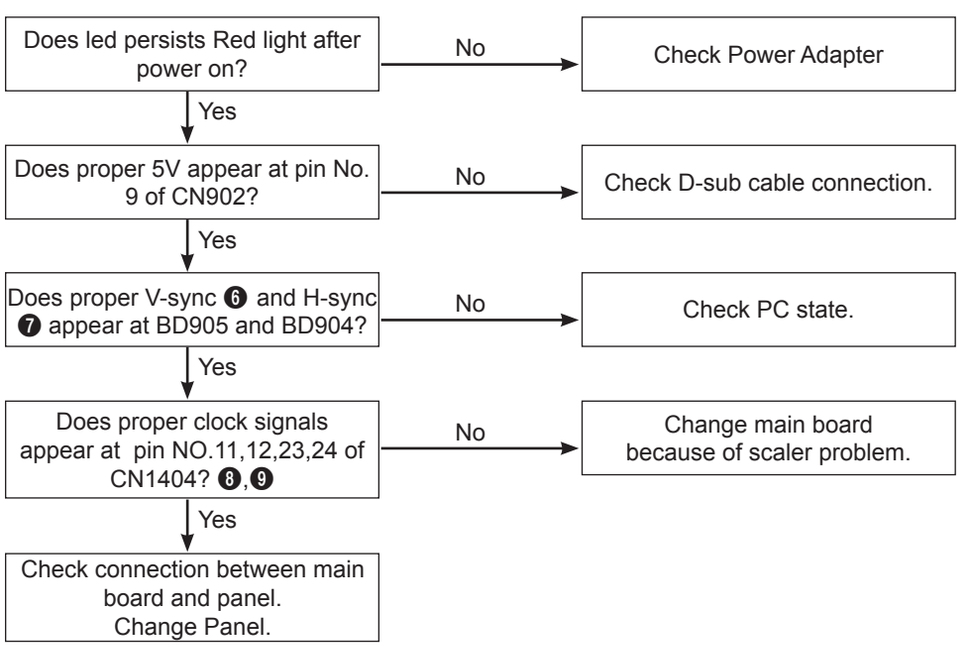
❹



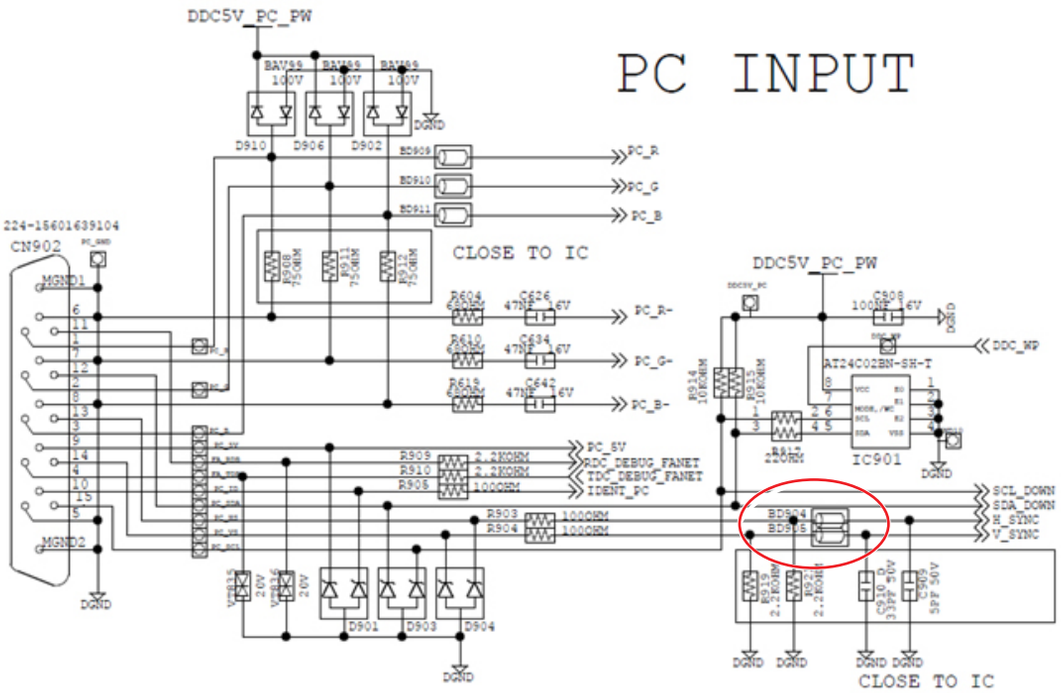
❺

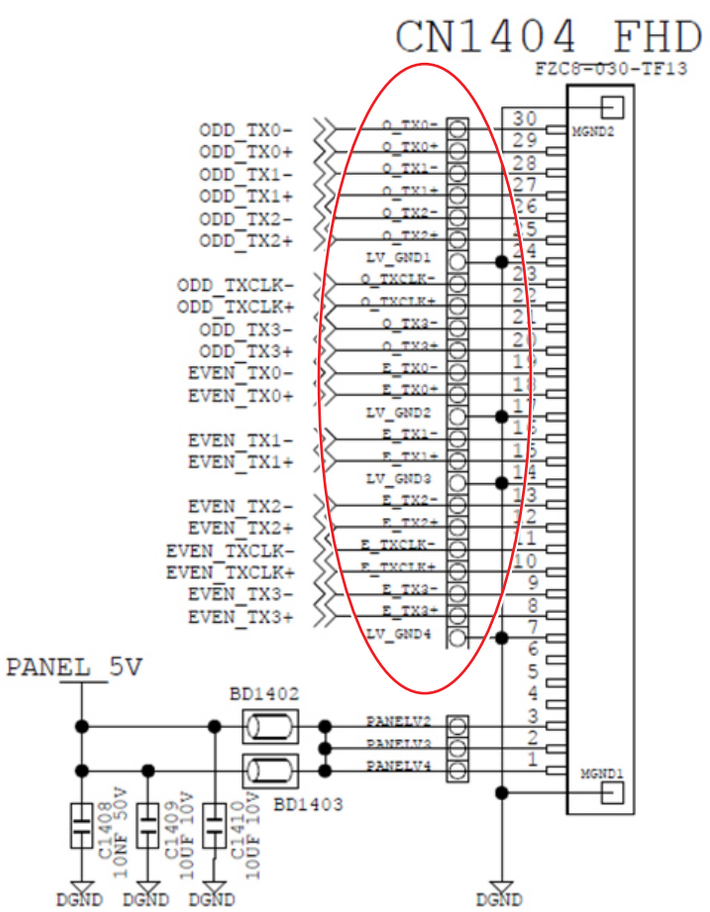


4-3. PC (ANALOG) No Screen

Symptom	– The LED power is on but no picture is displayed on the screen when the D-SUB cable is connected
Major checkpoints	– Even though the LED power turns on, the screen is blank when connecting the VGA cable. – Check the D-sub cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board.
Diagnostics	 Main Board Front 
Caution	Make sure Power connection before checking the Main Board.

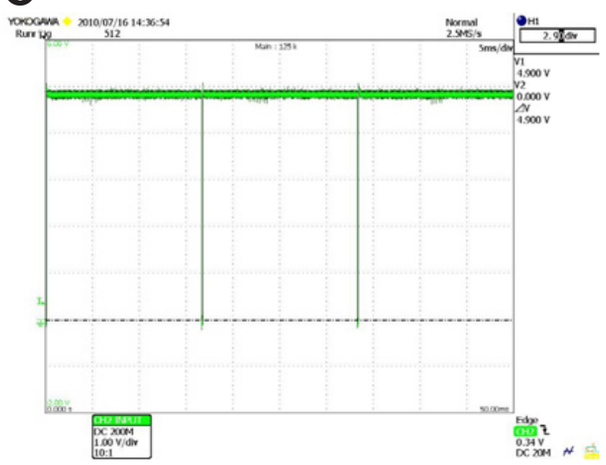
4-3-1. Circuit diagrams and waveforms (Analog) when no screen is displayed on the monitor





4-3-2. Waveforms

❻



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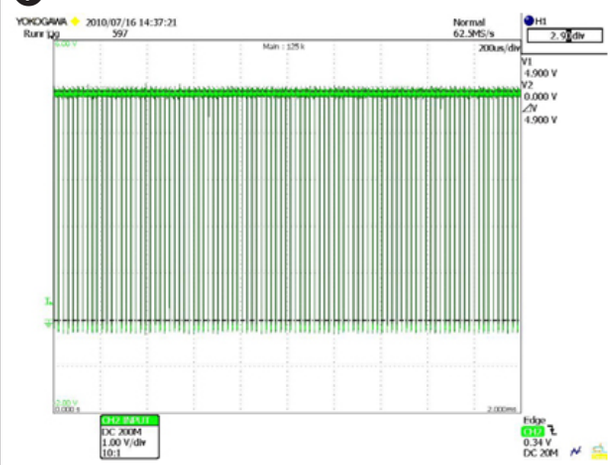
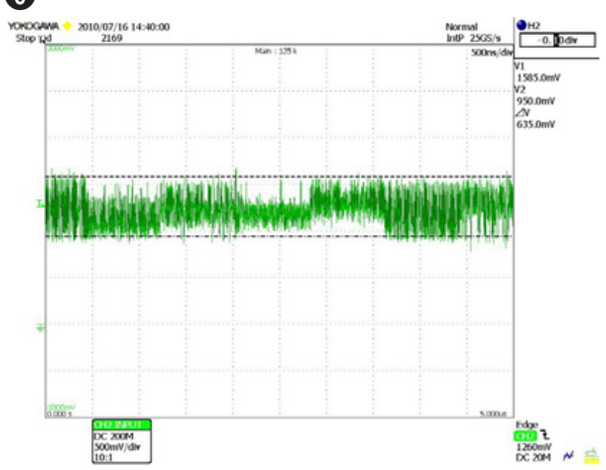
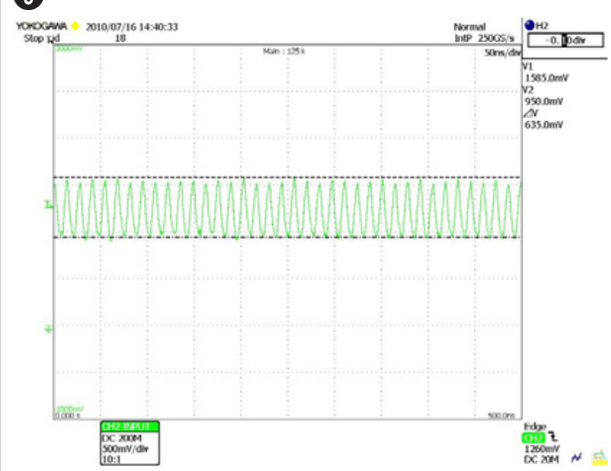


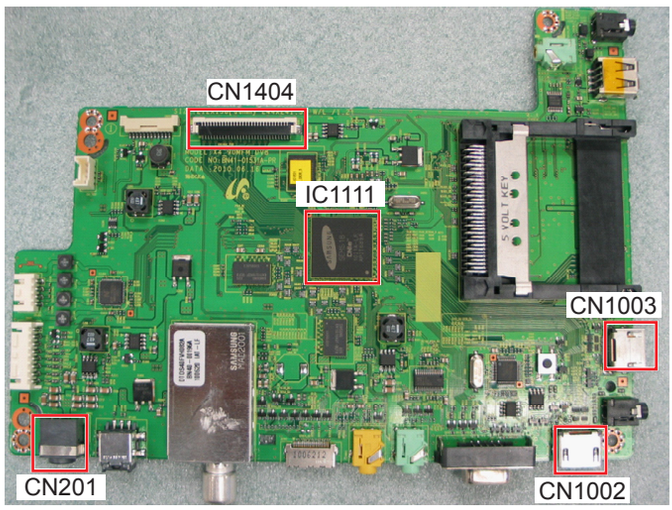
❽



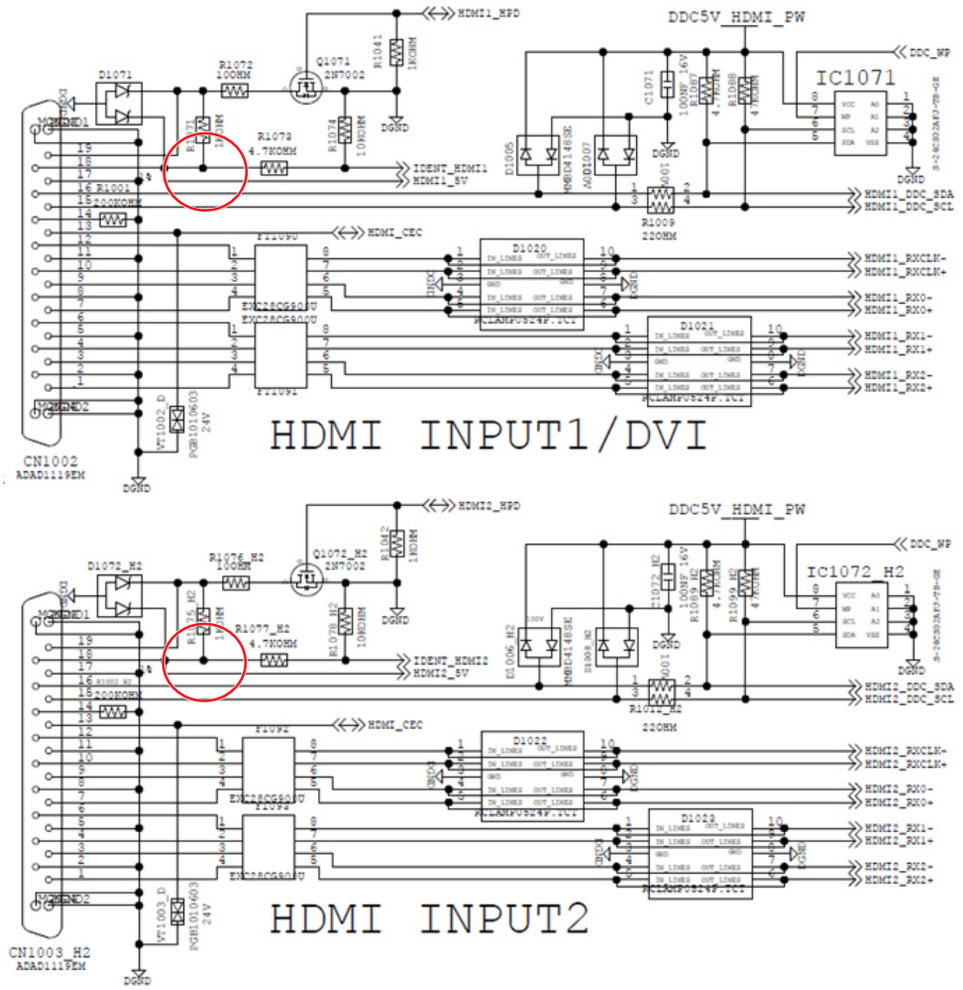
❾

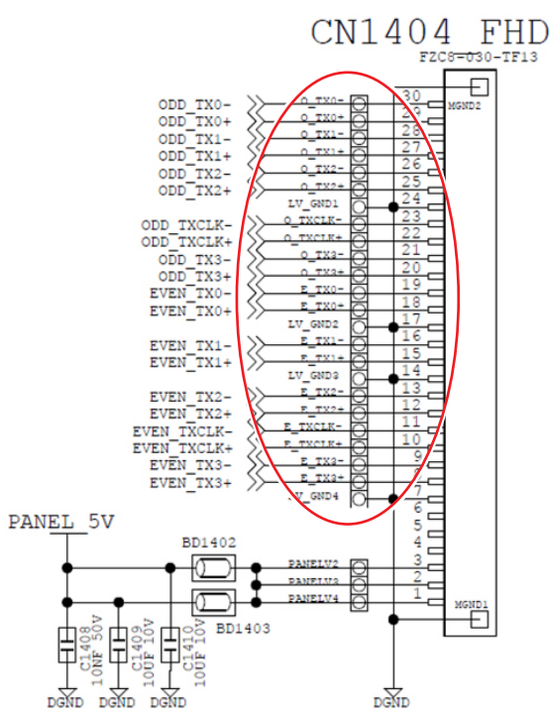


4-4. DVI/HDMI No Screen

Symptom	– The LED power turns on but the screen is blank when the HDMI cable is connected.
Major checkpoints	– Check the HDMI cable connections. – Check whether the LVDS cable is connected correctly to the panel. – Check whether the lamp connector of the panel is connected correctly to the IP board. – Check the circuit related HDMI input and scaler operation.
Diagnostics	 Main Board Front Does led persists Red light after power on? → No → Power adapter Yes ↓ Dose proper 5V appear at pin No. 18 of CN1002 or CN1003? → No → Check HDMI cable connection Yes ↓ Does proper signals appear at pin No.15(SCL) ❿ and No.16(SDA) ⓫ of CN1002 or CN1003? → No → Change IC1071 or IC1072. Yes ↓ Does proper clock signals appear at pin NO.11,12, 23, 24 of CN1404? ⓬,⓭ → No → Change main board because of scaler problem Yes ↓ Check connection between main board and panel. Change Panel.
Caution	Make sure Power connection before checking the Main Board.

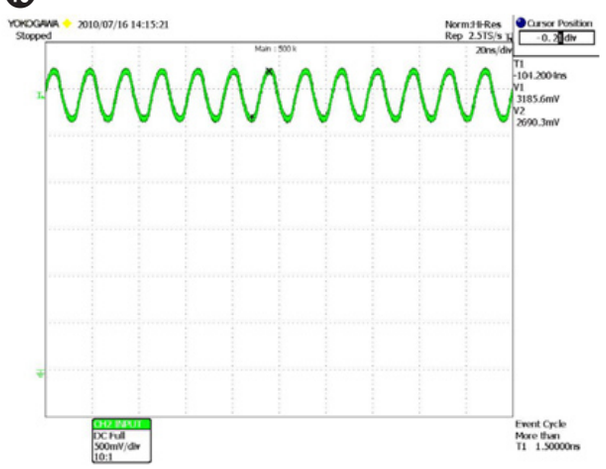
4-4-1. Circuit diagrams and waveforms (DVI/HDMI No Screen) when no screen is displayed on the monitor



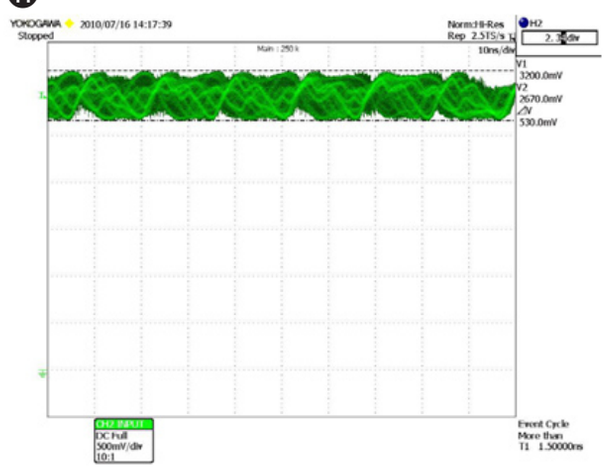


4-4-2. Waveforms

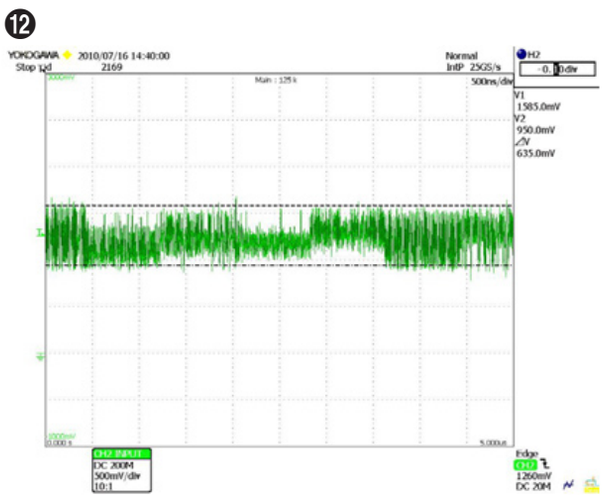
⑩



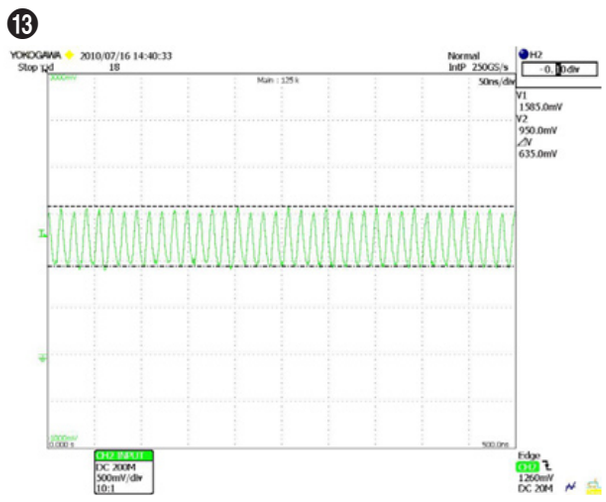
⑪



⑫



⑬



4-5. Faults and Corrective Actions

Fault Photo	Symptoms and Corrective Actions	Remarks
	Symptoms: DVI signals are not recognized. Causes: This fault occurs when the PC does not recognize the mode information because the DVI DDC has not been input to the monitor. Corrective Actions: Input the DVI DDC to the monitor.	* Refer to the Training Manual for information on inputting the DVI DDC.
	Symptoms: When the monitor is turned on, only a full white pattern is displayed continually regardless of the signals. Causes: This fault occurs when only the lamp power is supplied and no video signals are input to the panel due to a fault or incorrect connections of the LVDS cable. Corrective Actions: Replace or reconnect the LVDS cable correctly so that video signals can be supplied to the panel.	* A full white pattern is a feature of the TN panel and is displayed when no video signals are supplied.
	Symptoms: When connecting the DVD, noise occurs on the screen. Causes: The HDCP key is not inserted. Corrective Actions: Enter the HDCP key.	

4-6. Adjustment

4-6-1. Service Instruction

1. Usually, a color TV-VCR needs only slight touch-up adjustment upon installation.
   Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect aganist shock hazard, use an isolation transform.

4-7. How to Access Service Mode

4-7-1. Entering Factory Mode

To enter “Service Mode” Press the remote -control keys in this sequence :
- If you do not have Factory remote - control

Power OFF → INFO → MENU → MUTE → Power ON

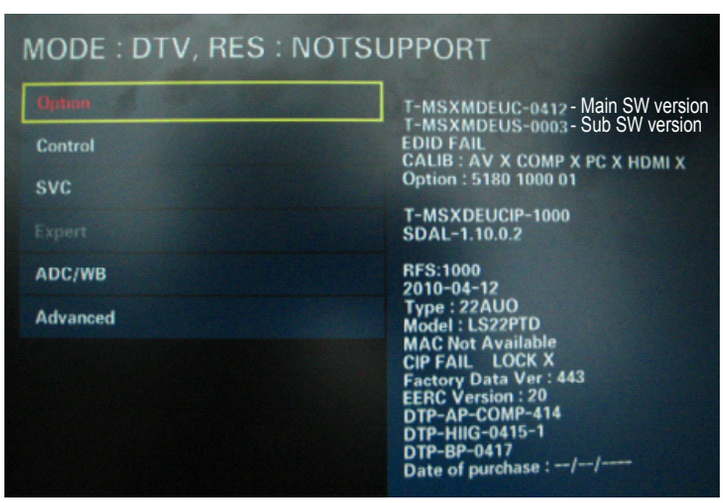
- If you have Factory remote - control

PICTURE ON → INFO → FACTORY

- The buttons are active in the service mode.

1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left
   Arrow Right, Menu, Enter, Number Key(0~9)
2. Function - Control Key : Source(ENTER), Menu, VOL-, VOL+, CH-, CH+, POWER

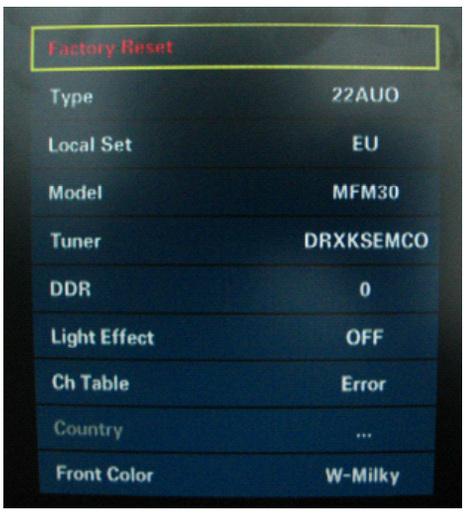
4-7-2. Service Mode Menu



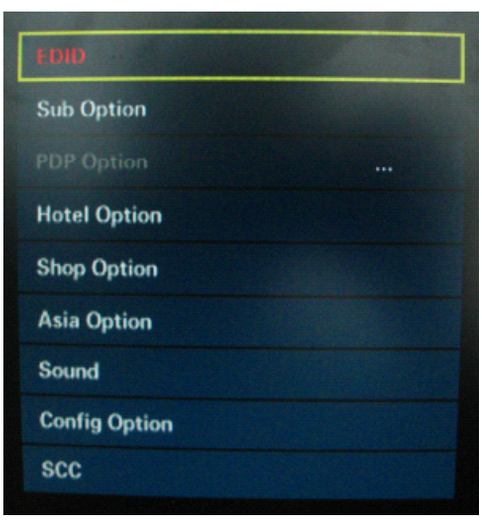
Menu	Full Menu Display/Move to Parent Menu
Direction Keys ▲/▼	Item selection by Moving the Cursor
Direction Keys ◄/►	Data Increase / Decrease for Selected Item
Source	Cycles through the active input source that are connected to the unit

4-7-3. Sub-Page of Service

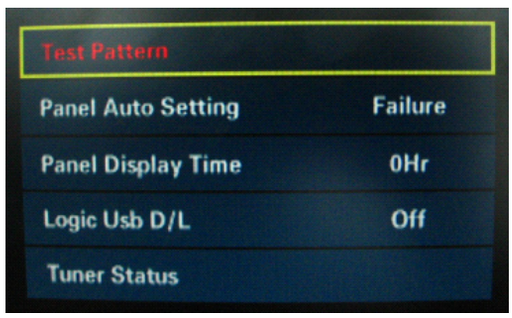
- OPTION



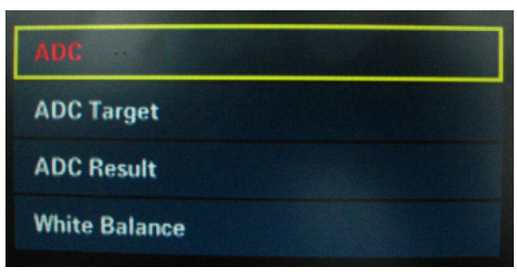
- Control



- SVC



- ADC/WB



4-8. White Balance - Calibration

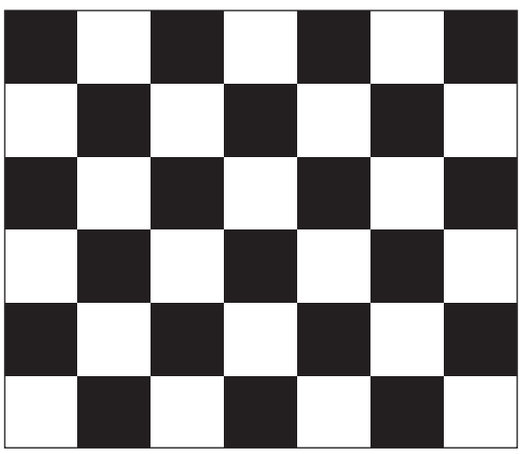
4-8-1 White Balance -Calibration

1. Calibration	→	PC Calibration

4-8-2 Service Adjustment - You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

Adjust spec.
1. Source : PC
2. Setting Mode : 1024X768 60hz
3. Pattern : Pattern #24 (Chess Pattern)



(Chess Pattern)

4. Use Equipment : CA210 & Master MSPG925 Generator

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
PC IN (Model_#21)	Perform in VESA XGA (1024x768) B&W Pattern #24	Lattice

<Table 1>

■ Method of Color Calibration (PC)

1) Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port
2) Press the Source key to switch to “PC” mode
3) Enter Service mode
4) Select the “Calibration” menu
5) Select the “PC Calibration” menu.
6) In “PC Calibration Off” status, press the “►” key to perform Calibration.
7) When Calibration is complete, it returns to the high-level menu.
8) You can see the change of the “PC Calibration” status from Failure to Success.

4-8-3 White Balance - Adjustment

		(low light)	(hight light)
3. W/B	→	Sub Bright R offset G offset B offset	Sub Contrast R gain G gain B gain

(W/B adjustment Condition refer next page)

4-9. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in AV, Component and HDMI modes.
3. The optimal values for each mode are configured by default. (Refer to Table 1, 2)
   It varies with Panel's size and Specification.

- Equipment : CA210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min

- Calibration and Manual setting for WB adjustment.

HDMI : Calibration at #24 Chessboard Pattern → Manual adjustment #92 pattern (720p)
COMP: Calibration at #24 Chessboard Pattern → Manual adjustment at #92 pattern (720p)
AV: Calibration at #24 Chessboard Pattern → Manual adjustment at #92 pattern (NTSC)

- If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.
- White Balance Manual Adjustment

P-Mode		Adjustment Coordinate			
		x	y	Y(Luminance)	T(K) + MPCD
AV (NTSC)	H/L	281	288	26" - Sub_CT:165 Fix 32" - Sub_CT:150 Fix	10,000(+0)
	L/L	281	288	Sub_Br:128 Fix	10,000(+0)
COMP (720P)	H/L	281	288	26" - Sub_CT:165 Fix 32" - Sub_CT:150 Fix	10,000(+0)
	L/L	281	288	Sub_Br:128 Fix	10,000(+0)
HDMI (720P)	H/L	281	288	26" - Sub_CT:165 Fix 32" - Sub_CT:150 Fix	10,000(+0)
	L/L	281	288	Sub_Br:128 Fix	10,000(+0)

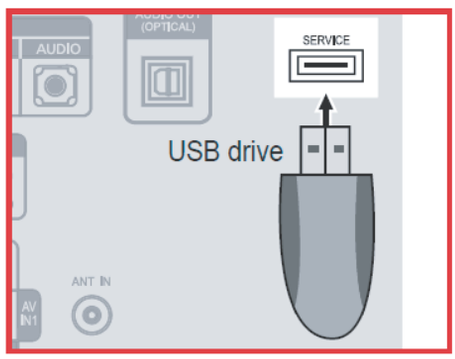
- Adjustment Specification
  White Balance : High light (±2), Low light (±3)
  Luminance : High light (Don't care), Low light (±0.2 Ft/L)

4-10. Servicing Information

4-10-1 USB Download Method

Samsung may offer upgrades for TV's firmware in the future. Upgrades will be possible by connecting a USB drive to the USB port located on your TV.

1. Insert a USB drive containing the firmware upgrade into the USB port on the rear of the TV.
2. Press the **MENU** button to display the menu.
   Press the ▲ or ▼ button to select "Support", then press the **ENTER** button.
3. Press the ▲ or ▼ button to select "SW Upgrade", then press the **ENTER** button.
   The message "Scanning for USB. It may take up to 30 seconds." is displayed.
4. The message "Upgrade version XXXX to version XXXX?
   The system will be reset after upgrade." is displayed.
   Press the ◄ or ► to select the "OK", then press the **ENTER** button.

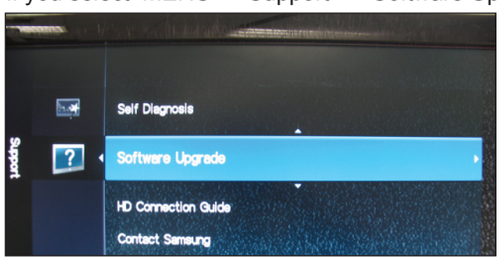


Please be careful to not disconnect the power or remove the USB drive while upgrades are being applied. The TV will turn off and turn on automatically after completing the firmware upgrade. Please check the firmware version after the upgrades are complete. When software is upgraded, video and audio settings you have made will return to their default (factory) settings.
We recommend you write down your settings so that you can easily reset them after the upgrade.

4-11. Software Upgrade

4-11-1. Program Upgrading - MAIN

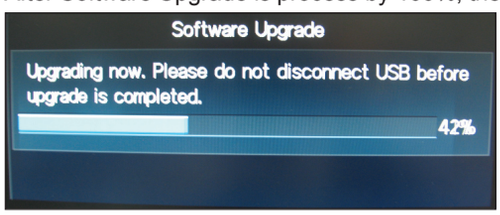
1. If you select MENU → Support → Software Upgrade on remote control, you'll see below picture



2. Press ENTER, then you'll see below picture. Select Yes

Software Upgrade
Scanning for USB... It may take up to 30 seconds.
Software Upgrade
Upgrade version 0800 to version 0900? The system will be reset after upgrade.
Yes
No

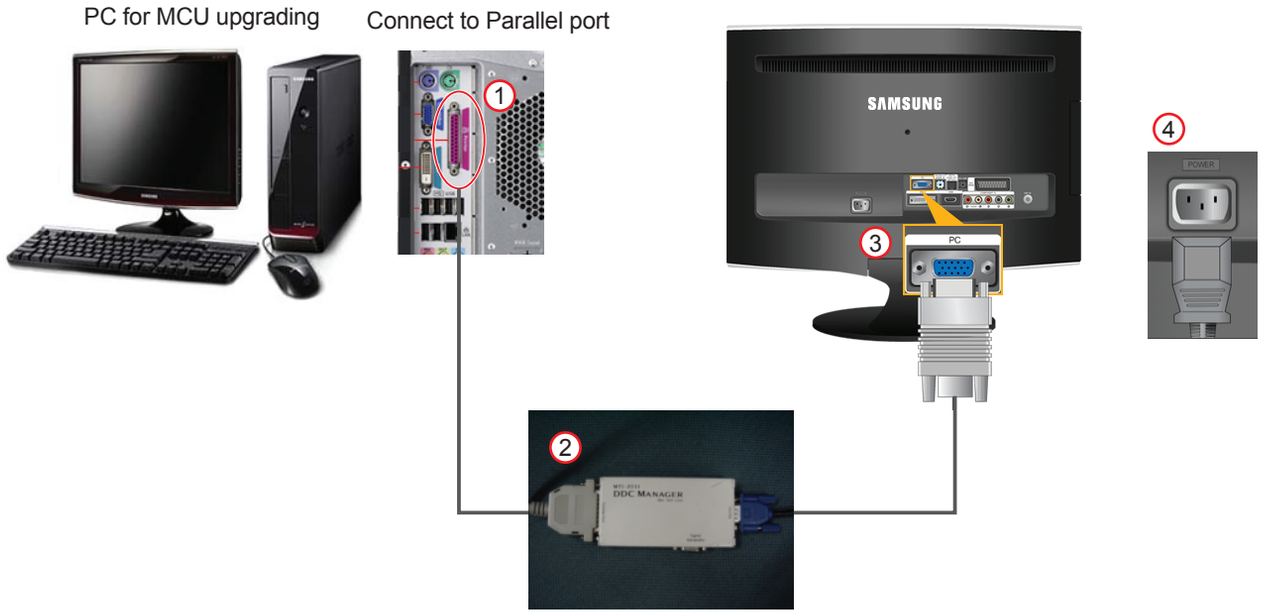
3. Micom program is now upgrading as below picture.
   After Software Upgrade is process by 100%, the monitor is automatically turn off and on.



4-12. Micom Program Upgrade

■ DDC Manager Connection

1. Prepare PC to Upgrade the Program.



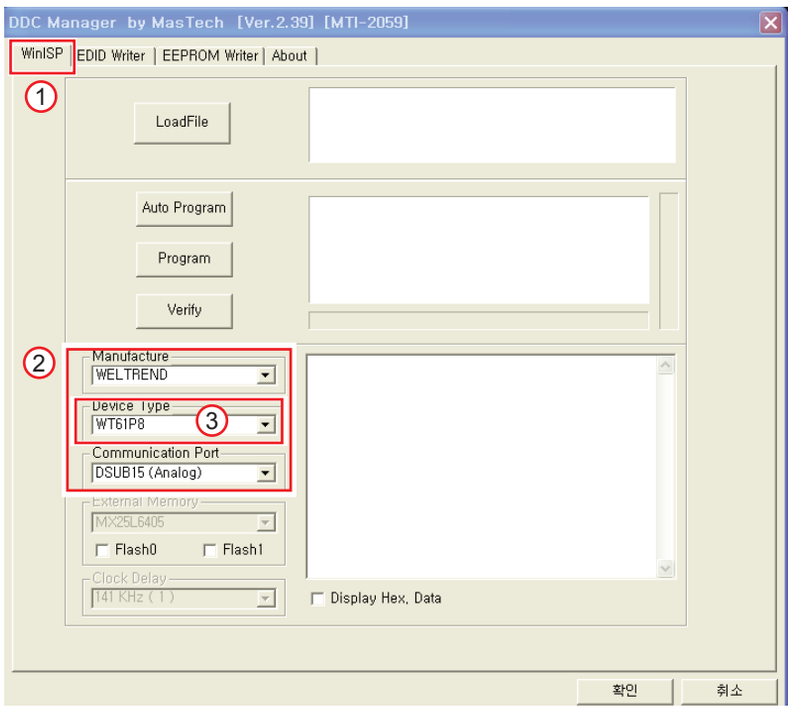
2. Prepare the DDC Manager
3. Connect D-sub cable to Target Monitor TV
4. Power on the Target Monitor TV

- winDDC_V2-39 Program installed

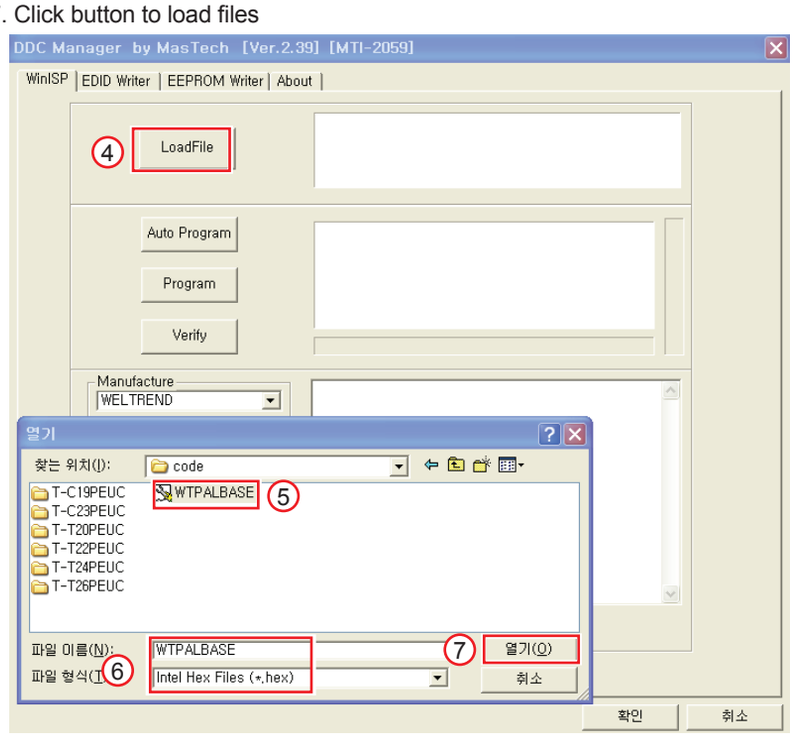
- Run winDDC

■ Sub Micom Upgrade

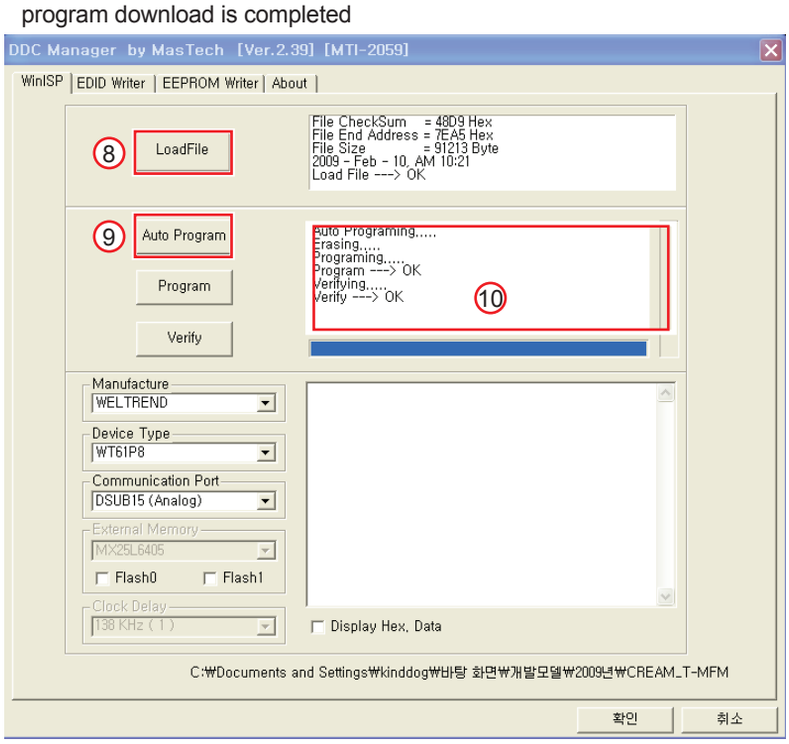
1. Select WinISP Menu
2. Make same setting like picture.
3. Choose Device Type.
   - WT61P8



4. Load File (Select file to download)
5. Set Option to load Binary Files
6. Select files (hex file)
7. Click button to load files



8. Check the OK message (Load)
9. Click Auto Program button
10. If you see OK message (Verify),
    program download is completed



6. Wiring Diagram

6-1. Wiring Diagram

CN 1601	
1	SR +
2	SR -
3	SL +
4	SL -

CN 401	
1	GND
2	LED STB
3	+ 3.3 V
4	IR
5	Key 1
6	Key 2
7	SCL
8	SDA

CN 201	
1	+ 14V
2	GND
3	GND
4	GND

OP1801	
1	SPDIF out
2	+ 5V
3	GND
4	GND

CN 200	
1	+ 14V
2	+ 14V
3	+ 14V
4	GND
5	GND
6	Protection Control
7	GND
8	GND
9	Lamp On/Off
10	NC
11	PWM Dimming control
12	GND

TU 1	
1	RF AGC
2	+ 5V
3	GND
4	+ 33V
5	GND
6	SCL
7	SDA
8	IF TP
9	IF AGC
10	DIF1
11	DIF2
12	Tuner AFT
13	Tuner SIF
14	NC
15	Tuner CVB

JA 701	
1	GND
2	GND
3	GND
4	GND
5	SC CVBS IN
6	GND
7	SC CVBS OUT
8	GND
9	SC FB
10	GND
11	SC R
12	GND
13	NC
14	SC G
15	GND
16	NC
17	Ident SC
18	SC B
19	GND
20	SC AV SL IN
21	SC AV SR IN
22	GND
23	SC SL OUT
24	SC SR OUT

CN 902	
1	PC_RED
2	PC_GREEN
3	PC_BLUE
4	GND
5	GND
6	GND
7	GND
8	GND
9	5V
10	IDENT_PC
11	GND
12	PC_DDC_TXDA
13	PC_HS
14	PC_VS
15	PC_DDC_RXCK

CN 801	
1	GND
2	AV CVBS
3	Ident AV
4	Cpmp. AV SR in
5	NC
6	NC
7	Comp. AV Sl in

CN 802	
1	GND
2	Comp. Y
3	Ident Comp.
4	Comp. Pb
5	NC
6	NC
7	Comp. Pr

CN 901	
1	GND
2	PC DVI SL IN
3	PC DVI SR IN
4	NC
5	NC
6	NC

CN 1002	
1	HDMI1_RX2+
2	GND
3	HDMI1_RX2-
4	HDMI1_RX1+
5	GND
6	HDMI1_RX1-
7	HDMI1_RX0+
8	GND
9	HDMI1_RX0-
10	HDMI1_RXCLK+
11	GND
12	HDMI1_RXCLK-
13	NC
14	NC
15	HDMI1_DDC_SCL
16	HDMI1_DDC_SDA
17	GND
18	IDENT_HDMI1
19	HDMI1_HPD
20	GND
21	GND

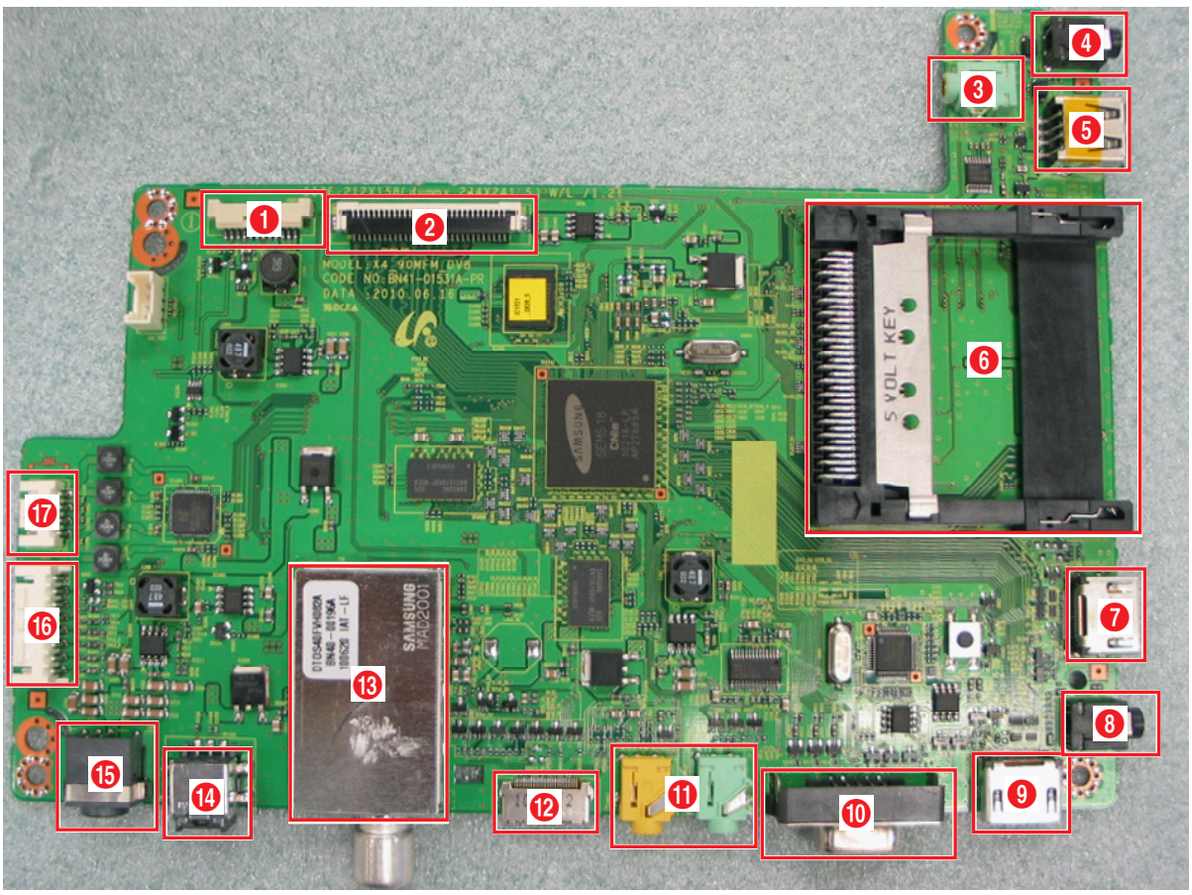
CN 1003	
1	HDMI2_RX2+
2	GND
3	HDMI2_RX2-
4	HDMI2_RX1+
5	GND
6	HDMI2_RX1-
7	HDMI2_RX0+
8	GND
9	HDMI2_RX0-
10	HDMI2_RXCLK+
11	GND
12	HDMI2_RXCLK-
13	NC
14	NC
15	HDMI2_DDC_SCL
16	HDMI2_DDC_SDA
17	GND
18	IDENT_HDMI2
19	HDMI2_HPD
20	GND
21	GND

CN 1004_FHD	
1	5V
2	5V
3	5V
4	NC
5	NC
6	NC
7	GND
8	TX_EVEN3+
9	TX_EVEN3-
10	TX_EVEN_CLK+
11	TX_EVEN_CLK-
12	TX_EVEN2+
13	TX_EVEN2-
14	GND
15	TX_EVEN1+
16	TX_EVEN1-
17	GND
18	TX_EVEN0+
19	TX_EVEN0-
20	TX_ODD3+
21	TX_ODD3-
22	TX_ODD_CLK+
23	TX_ODD_CLK-
24	GND
25	TX_ODD2+
26	TX_ODD2-
27	TX_ODD1+
28	TX_ODD1-
29	TX_ODD0+
30	TX_ODD0-

CN 1204	
1	+5 V
2	USB DM
3	USB DP
4	GND

CN 1301	
1	GND
2	HP SL OUT
3	HP SR OUT
4	GND
5	Ident HP
6	NC

6-2. Board Connection - Main Board

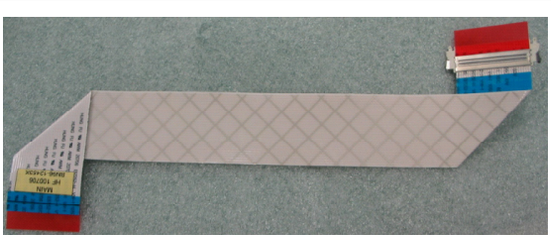


No.	Connector	No.	Connector
1	LED Driver	10	PC Analog
2	LVDS Connector (Connect to Panel)	11	Component Y, Pb, Pr CVBS , Component CVBS SL, SR
3	Debug connector	12	Scart Gender Connector
4	Headphone	13	ATV/DTV Tuner
5	USB (Program Update)	14	Digital Audio Output (Optical)
6	CI (Common Interface) Slot	15	Adapter DC Power (+ 14V)
7	HDMI / DVI	16	Function Connector (Connect with function Assy)
8	PC Stereo	17	Speaker R (Red) Speaker L (Yellow)
9	HDMI / DVI		

6-3. Connector Functions

Connector	Functions
CN1404(Full HD)	Transmits LVDS signals from the Main board to the panel * When a problem occurs: The Blank Screen and No Power errors may occur.
CN902	VGA signal input terminal * When a problem occurs: The No RGB Output error may occur.
CN1002, CN1003	HDMI&DVI signal input terminal * When a problem occurs: The No HDMI&DVI Output error may occur.
CN210	Supplies 14V from the Power adapter to the Main board. * When a problem occurs: The Blank Screen and No Power errors may occur.
CN802	Component video input terminal. * When a problem occurs: The No MIC Input error may occur.
CN901	PC Audio input terminal. * When a problem occurs: The No Speaker Output error may occur.
OP1301	Digital Audio output terminal. * When a problem occurs: The No USB Download Operating error may occur.
CN801	Component Audio input terminal. Composite Video input terminal. * When a problem occurs: The No Speaker Output error may occur.
CN1301	Headphone output terminal.

6-4. Cables

Use	LVDS 30P FFC cable
Code	BN96-12453X
Photo	

Memo